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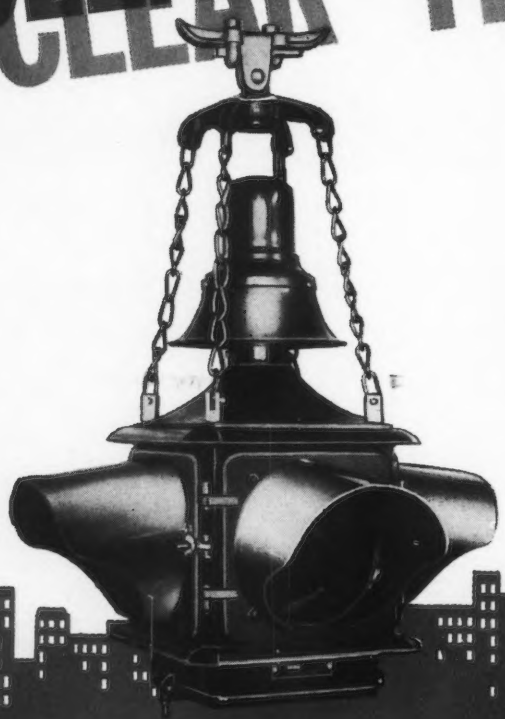

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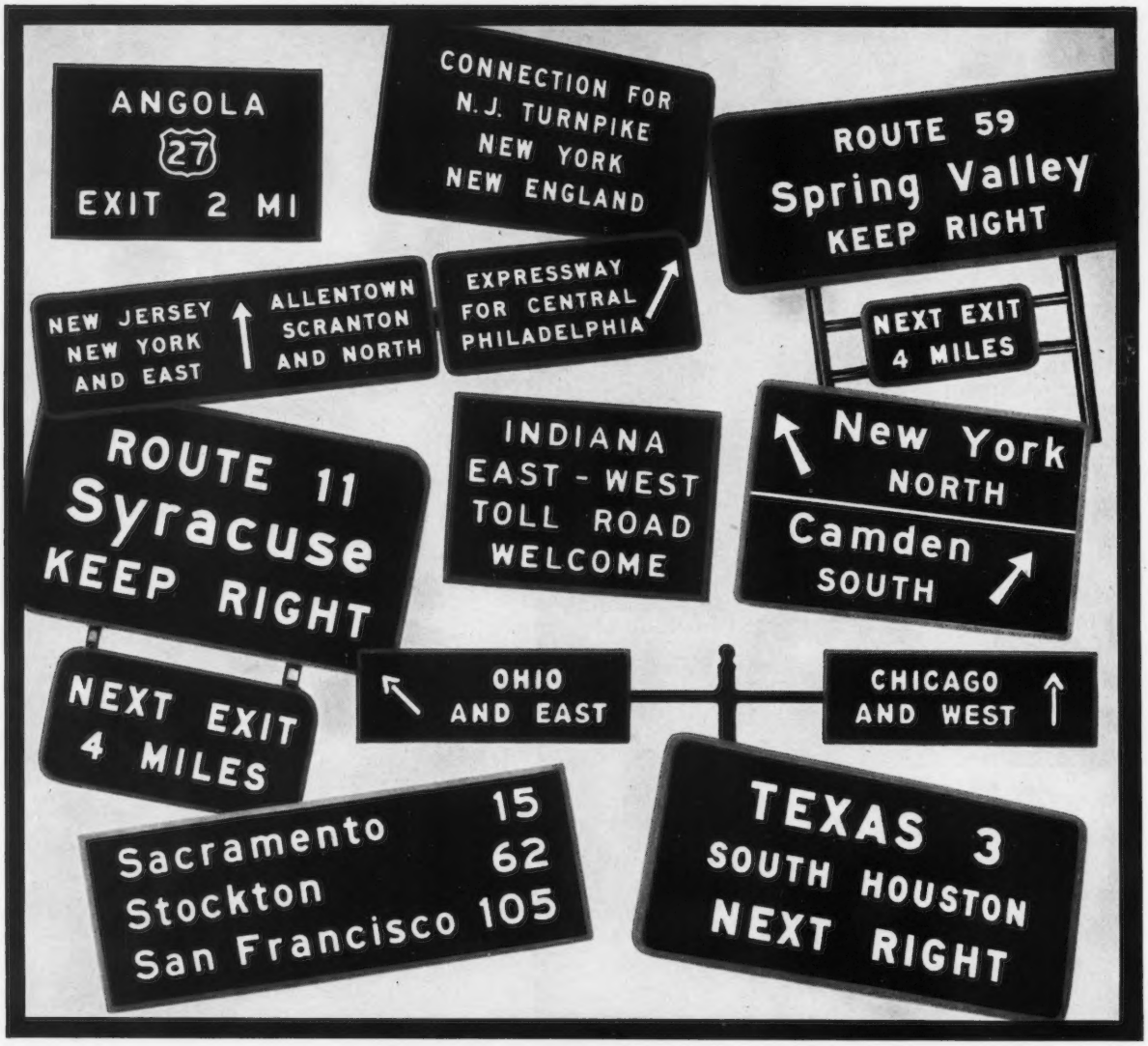

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TRAFFIC ENGINEERING

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Vol. 28 OCTOBER, 1957 Number 1

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CONTENTS

FEATURES

What is Creating the Traffic Problem—Which Direction is it Going? 9
D. Grant Mickle

Child Pedestrian Safety: A Realistic Approach 13
Harold Marks

Limitations of Signal Spacings in a Coordinated System on a High Speed, Dual Highway 20
Burton M. Rudy

NEWS

Traffic News 26
New Appointments 29
Promotions 29
New Publications 30
Strictly Business 32
Training Opportunities 49

INSTITUTE AFFAIRS

Secretary's Column 34
Membership Applications 35
Section News 36
Yearbook Changes 38

MISCELLANEOUS

Positions Available 35
Reference Notes
- Separating Walkers and Right-Turners 39
- Six Months Use of "Yield Right-Of-Way" Signs 42
- Statewide Campaign for Realistic Speed Limits 43
- First Meter Equipped Parking Lot in Wichita 46

Letter to the Editor 49
Professional Service Directory ..... 50 & 51
Index to Advertisers 50

COVER: Traffic congestion on the George Washington Bridge, looking from New Jersey toward New York City.

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Frankly Speaking . . .

AUTOMOTIVE TRANSPORTATION is a dynamic factor affecting the fiber and character of the American economy. Specific problem areas or symptoms of underlying deficiencies have an impact on various segments of our National community, the forces of which reverberate through legislative halls, business and industry, and Nation's press and the home.

Traffic engineering and other professional disciplines which provide or service automotive transportation are fundamentally affected by dynamic changes, but what is more important is the obligation of the professions toward objective treatment of automotive transportation problems and performance in the best public interest.

Even the smallest chore in the daily conduct of a traffic engineering job, the timing of a traffic signal for example, should be viewed not as the task itself, but as an opportunity to improve the safe and efficient flow of traffic, and serve the needs of the motoring public, the community, and the Nation's economy.

There is a growing recognition that sharp lines of division of administrative responsibilities, as between political jurisdictions, can become barriers to the efficiency of automotive transportation.

Likewise, we should appreciate that there can be no sharp or arbitrary divisional line of demarcation between the various "reservations" of the several professional disciplines. Each has primary responsibilities and functions. Almost all have secondary areas of responsibility which overlap into the areas of secondary responsibilities of other disciplines.

Perhaps the greatest stimulant to be injected into the veins of automotive transportation since its inception has been the Federal Highway Act of 1956. The Nation's highway and traffic engineers and automotive support groups pleaded for the wherewithal to get the Nation out of the traffic muddle. Congress provided more than most honestly anticipated. Now there is a tremendous job upon us.

Never was there a greater need for solidarity among the membership of the Institute and the membership of other professional organizations. Never was there so great a need for communication, liaison and coordination between the several professional societies and the many professional disciplines providing the Nation's automotive transportation.

How well we perform in this regard during the immediate future will determine to a great extent how well we are able to face the judgment of the American public some time in the future when the success or failure of our present ambitious undertaking to build and operate efficiently the greatest transportation network ever conceived by man will be taking shape in reality.

There can be no question that there will be a day of such judgment. For automotive transportation and all of its facets are equated with the Nation's economic and social welfare.

JOSEPH E. HAVENNER
President,
Institute of Traffic Engineers

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What is Creating the Traffic Problem - Which Direction is it Going?

by D. Grant Mickle
(Mem., ITE)
Director Traffic Engineering Division
Automotive Safety Foundation

This is adapted from a paper presented at the Ninth Annual Traffic Engineering Conference, Columbia, Missouri, in May, 1957.

EVER SINCE DEVELOPMENT of the wheel, man's urge has been to ease the difficulties of transport. As man and his goods have become more mobile, the urge has grown to travel over greater and greater distances in shorter and shorter lengths of time, with complete freedom of movement.

With the advent of the automobile, man attained the greatest individual mobility to date.

In 1900 there were only 8,000 passenger cars and not one truck or bus. In 1956 there were more than 65 million vehicles, including nearly 11 million trucks and buses. What caused this fantastic growth?

It was partly due, of course, to the fact that our population doubled during that same period. Important factors, too, were the good roads movement of the 1920's and the improvements to the automobile itself, which made it a relatively troublefree, all-weather means of transportation. Mass production and distribution resulted in lower unit costs, and our national prosperity increased individual purchasing power. Because all these factors are so interwoven, it is impossible to say what their individual effect has been. Certainly each has played a large part in the increase in motor vehicle ownership.

We now enjoy a shorter work week and, conversely, more leisure time to pursue our desire for freedom of movement. We have also seen a significant shift in our population. In 1900, 40 per cent of the population lived in cities—about 30 million people. Today, 64 per cent live in urban areas with these 105 million people totaling about three and a half times the urbanites of 1900.

Although urban living would seem to promote the use of mass transit, the trend has been steadily away from that mode of transportation with more and more people turning to the use of their personal automobiles for home to work travel and for shopping trips. A natural result has been an increase in peak hour traffic and demand for parking.

It would not necessarily follow that more motor vehicles will create a greater traffic problem, if it were not for the fact that an automobile is not the entire answer to mobility. To attain true freedom of movement we must have streets and highways on which to operate our vehicles, and facilities in which to store them when they are not in motion. Construction of such facilities simply has not kept pace with the automobile. In the past ten years, while motor vehicle registration increased by 26 million, road and street construction continued at approximately the same rate as in the previous decade. In fact, the bulk of the road and street systems of today are remarkably unchanged from those of the pre-auto age. The construction that has taken place has been largely confined to rural areas and the emphasis has been mainly on structural aspects with safety, capacity and storage of vehicles minimized.

The neglected facets are now the prime components of the "traffic problem" which, actually, is not one problem at all, but many. Major manifestations are congestion, accidents and lack of parking facilities.

Congestion robs the country annually of billions of dollars. Studies throughout the nation have shown that new highways pay for themselves in user benefits such as decreased operating cost and time savings. These studies have proven beyond question that we pay for adequate roads whether we have them or not.

Traffic accidents cause more deaths than any other type of accident among persons under 65 years of age. The economic loss charged to the traffic toll last year alone is estimated to be $4.75 billion.

The parking situation in our cities has steadily deterioriated. The trend from mass to individual transit, coupled with the loss of available off-street parking space to other land uses and the demands of traffic movement, has created an acute shortage of parking space in nearly every city in the country.

And as though the present situation is not bad enough, we are told that the next 20 years will bring a population increase of 56 million persons and an additional 50 million passenger cars.

All but one million of these people are expected to live in the city—nine million in or near the center thereof and 46 million in the suburban fringe of present metropolitan areas.

When this prospect is combined with the continuing trend away from mass transit to private automobile, indications are that trips will be longer, the demand for parking will increase, and the urban areas as we know them today will blossom far beyond their existing boundaries.

Estimates of vehicle miles of travel 20 years hence range from two to four times the present value, depending on locality and type of system.

Naturally, all of us hope for continued prosperity and growth, and there is no reason to believe that such will not be the case. Present-day congestion has not seriously dampened man's urge for mobility, nor turned him toward more restrietive modes of travel. It follows, therefore, that the future will see continued need for new

—Webb & Knapp National Corp.

A sketch of the proposed Southwest Redevelopment in Washington, D.C. The plan incorporates freeway development, along with a large residential area and accompanying office and cultural center. A 2,500-car parking garage underneath the mall and plaza, the heart of the office and cultural center, is called for.

streets and highways and better utilization of those now existing.

Passage of the 1956 Federal Aid Highway Act indicates the willingness of Americans to undertake a program aimed at improving conditions and gives real hope that highway construction can be stepped up to the pace of need.

We can expect the problems of the future to be larger and more challenging. We also can expect they will attain their greatest magnitude in the urban areas.

Meeting the problems of the future will require careful planning and continued advances in methods of operation. Basically, the traffic planner seeks additional capacity, thereby relieving congestion and many other possible causes of accidents. He also seeks to separate the various uses, providing for each a system designed to its needs and thereby able to serve it better. He recognizes that our present streets are used for both through and local traffic and for moving vehicles as well as storing them—that in trying to serve many purposes our streets serve none of them well. His plans must encompass all modes of travel—private car, truck and mass transit. In planning the future trafficways, he will, in fact, be shaping the city; he must take the "total" approach.

We see encouraging evidence of this in the "new city" plans. An example is the one for Fort Worth by Victor Gruen, in which parking is made an integral part of the city (as it rightly should be) and the separation of function is carried through to the end that certain streets are set aside for delivery vehicles and others for exclusive use of the pedestrian. In Missouri there is an excellent example in Kansas City, where urban renewal and parking were included in freeway planning.

In the smaller cities the approach is essentially the same but scaled down to the dimension of the problem. Local and through traffic should be separated so that each may have a facility meeting its particular needs. Certainly a step in the proper direction is to remove through traffic from the central business district so that shoppers and others with business there can have full use of the limited facilities. The very least that should be sought is an arterial street system and a master plan based on future growth and land use.

A major milestone for the planner was the freeway concept which relieves a trafficway of responsibility for land service and parking so that it can serve adequately the purpose of movement.

In design of such facilities the traffic planner must seek to avoid the greatest pitfall of the freeway concept—inflexibility of operation. This is the inability to adjust day-to-day operation to the unusual condition — the unexpected bottleneck—the closure of one or more lanes by construction, maintenance, accidents, or just plain overloading.

One well-known attempt to provide flexibility in a high type facility was made in the Chicago Park District where mechanical dividers are used to assign additional lanes to the major direction of flow. Certainly designers should give more thought to this important problem.

The planner will have to seek balance in the total picture. Safety, capacity, and parking must each receive its fair share of attention. Just as surely as preoccupation with structural aspects in the past contributed to our present problems. so preoccupation with one type of facility, with one mode of travel, with safety, with capacity, or with parking, to the exclusion of the others, will lead to disappointment, inadequate service and inefficiency.

To properly plan for the future, we need facts. We need to know how to get them and how to analyze and interpret them. Highway departments have, for many years, collected factual data for their systems. They have not, however, collected facts for the urban areas to the extent necessary.

Recognizing the need for urban transportation planning and the absence of adequate data in the cities, the National Committee on Urban Transportation has undertaken to determine what facts are needed and satisfactory methods of collecting, analyzing and interpreting them. The National Committee soon will publish a series of documents designed especially for the city. The studies and procedures they will recommend will be applicable to cities large and small.

Glenn Richards, a leader in the transportation field, is chairman of the National Committee. The work of his committee will provide the technical tools necessary for the big job ahead. These tools, once made available, must, of course, be utilized. Indeed, in the full and continuous use of those techniques by cities everywhere, lies the chief hope of the future. The value of the National Committee's contribution cannot be overstated. All of us, whether we are in city, county or state government, should support and encourage this group in its monumental undertaking.

Turning now to the problems of you who are in the field of traffic operations . . . you too, in your quest for safety and freedom of movement, seek additional capacity, but generally through the better use of existing facilities.

During the great new era of road building you will have the difficult task of operating the system—a system which for at least the next 15 years will be a discontinuous, constantly

changing thing. That period is sure to be a trying one, particularly in metropolitan areas. In fact, I see this problem of interim operation as one of the most difficult in the immediate future. This has implications beyond just operations. It will require careful planning and programming. How a facility is to be operated during construction must be decided in the planning stage, not after the facility is ready for use. Proper operation of the first few portions of the program can go a long way toward developing continuing public support for it. Unreasonable delays resulting from poor planning and operations can seriously dampen public support; without public support the over-all program will never reach culmination.

I spoke earlier of inflexibility in a freeway system. This will be a major problem area for the operating engineer. No longer will he be able to route traffic around the block, and in many instances he even will be unable to use the "other side" of the highway to bypass bottlenecks and temporary stoppages. Considering the speeds and volumes expected on tomorrow's freeway systems, every change in conditions will have tremendous potential for accidents and congestion. To solve this problem the operating engineer may have to develop techniques for selective loading of the individual parts of the system to keep them at or near capacity but never over it. Such devices as remote controlled gates at "relief" interchanges and adjustable barriers which can divert traffic to frontage roads or paralleling streets may be required to keep the total network operating at a satisfactory level.

—San Francisco Traffic Safety Division

In San Francisco, emergency neon detour signs are located at the on-ramp entrances to the James Lick Freeway. The signs control the southbound traffic, advising the motoring public of the proper route to take, thereby avoiding any delay in the closing of the freeway. A 10-inch bullseye yellow flasher is installed directly under the sign and goes into operation whenever the sign is lighted.

Traffic engineering techniques applied to a wide intersection to make efficient use of what would otherwise be a "no-man's land."

Engineers who have freeway systems to operate have awaiting them a whole new field called traffic service. Experience to date has shown that telephone and emergency towing service is required even on short sections of urban freeways. Motorists will expect good advisory signing at points convenient to areas where they can obtain the goods and services now provided by roadside business.

The motorist who has been conditioned to freeway operation with its high speed, safety and convenience is apt to look with some disfavor on present surface street operations. Here the operating engineer will be expected to develop new techniques for traffic control.

Under present methods of operation we realize only about a quarter of the actual capacity of our existing city streets. More efficient use is a must for the future. Traffic demands should control the system rather than be controlled by it. When this is accomplished twice to three times the present volumes can be accommodated. This applies to both the large and small city.

Judicious use of such tested techniques as one-way streets, reversible lanes and prohibition of parking and turning movements can do much to improve traffic movement. Control of driveways and curb cuts, channelization, signalization, signing and marking, and improvement of sight distance, have their place in every city. These matters deserve our attention for several reasons. They offer a possibility for an immediate improvement without prolonged planning and financing delays; they deal with an area of present and future need; and there is much possibility for their improvement and extension. While the subject of freeways and master plans may hold more fascination for us, we must realize they are only part of an answer.

Certainly the years ahead will offer everyone concerned with traffic operations a great challenge and, at the same time, opportunity to make a real contribution to safe, efficient and economical transportation; opportunity to relieve your city or state from its fantastic burden of lost time and money and make it a better place in which to live.

How well this opportunity is realized will depend not only on the skills of the traffic engineer, but on whether he has the necessary administrative machinery to deal with the traffic problem. It is an unfortunate fact that many cities and states are not properly

—Michigan State University

"To bolster efforts of our educational institutions we must be prepared to offer on-the-job training and make better use of our own engineers."

organized to plan and operate a transportation system.

Several studies of street transportation management have revealed this. In some cities it was found that responsibility for street planning and operation was divided among 10 or 15 agencies. This is not necessarily bad in itself, but it can be if proper coordination is not exercised to prevent duplication of effort or, even worse, the possibility that in the confusion some functions go unassigned.

Frequently the laws under which a governmental unit operates constitute a very real stumbling block to efficient organization and operation of the transportation system. This may result either from omissions in the law or from provisions which require that specific actions be taken in specific ways. In one city it was found that 25 weeks were required before a STOP sign could be erected. Further investigation revealed that this time could not be reduced materially without revision in the law which required approval of every STOP sign by four different officials or boards.

Lack of proper organization and effective legal tools reduce many traffic operations offices to the status of complaint departments.

The studies I refer to were made in relatively large cities which had traffic engineering departments. A different situation exists in the smaller cities which do not employ a full-time traffic engineer.

It may be that cities which cannot afford a staff will have to look to the state or the county for traffic engineering services. Examples of such arrangements are not uncommon and they do tend to lend uniformity to traffic operations throughout a large area. Another possibility is combining with neighboring cities to retain the services of a qualified engineer.

At the state level, the American Association of State Highway Officials has recognized the need for improved traffic management and has appointed a subcommittee to study and report on the proper functions of a state traffic division, the level at which those functions should be performed, the responsibilities of such a division, and the best administrative setup to discharge those responsibilities. We expect great things from this group.

Another facet of the general subject of management and law is the division of governmental responsibility in urban areas. I mentioned earlier that some 46 million more people are expected to crowd into the suburban fringes of existing urban areas in the next 20 years. A natural result will be urban complexes which will include more than one city, one county or one state. For example, a motorist in Kansas City's metropolitan area doesn't really care whether he is in Kansas or Missouri, in Clay County or Jackson County, in Kansas City or Independence—he wants a transportation system which will take him from his origin to his destination in acceptable safety, at a reasonable speed and via continuous routes. It appears that this could be done better if transportation planning, management and operations were on an urban area basis, rather than a political boundary basis.

This, of course, is true of all city services, such as police and fire protection, water and sewerage. Any attempt to treat the situation should encompass all functions rather than transportation alone. In Missouri the Mo-Kan Metropolitan district has been recommended as a solution of this problem. If it is any consolation, others are currently faced with the same situation and the years to come will see many more metropolitan areas, large and small, joining the ranks.

The Committee on Highway Laws of the Highway Research Board currently is engaged in a national research program designed to provide the highway officials of the nation with comprehensive reports on the legal aspects of every major highway function.

If we are to stay abreast of the traffic problem it is important that we modernize our highway law. Not only as it applies to management, but to such important functions as right-of-way acquisition, state, city and county relations, and control of access.

And now, we come to our last problem area I want to cite. All of you are aware of the acute shortage of qualified men to staff street and highway planning and operations departments. Present estimates place the deficiency of qualified traffic engineers at 1,200 men. There is no reservoir from which such men can be drawn. Competition for civil engineers is so intense that only a trickle enter the highway field, and very few of these choose traffic engineering as a specialty. Our colleges and universities, of course, are making a creditable effort to educate men. For example, the Universities of California, Purdue, Northwestern, and Michigan State, have set up institutes to aid in the solution of the traffic problem. This they do, and very effectively, by providing a curriculum of undergraduate study in transportation management and engineering, by offering graduate courses, by conducting short courses for practicing officials and engineers, by encouraging and conducting research, and by offering field services to aid cities and counties in conducting studies of their individual problems.

To bolster efforts of our educational institutions we must be prepared to

(Continued on page 40)

Child Pedestrian Safety: A Realistic Approach

by Harold Marks
(Assoc. Mem., ITE)
Traffic Planning Engineer
Los Angeles County Road Department

ARE WE PROVIDING too little protection for our school age pedestrians — or are we possibly providing too much? Do we now have a balanced traffic safety program — or is the emphasis in the wrong direction? Questions such as these illustrate the need for basic factual information — a yardstick by which the adequacy of our present school safety program can be measured. The objective of this paper is to provide a factual basis for the development of a realistic approach to child pedestrian safety, based upon the problem as it exists rather than upon opinions and pressures.

One way of measuring the significance of the school safety problem is by the constant stream of complaints and requests received by public agencies in regard to improvement of school safety. No other phase of traffic safety demands so much attention from public officials and agencies. Every traffic engineer and law enforcement official is familiar with the impassioned pleas for better protection of school children in the vicinity of schools, and especially at school crosswalks. Anyone reading the newspaper is familiar with the pressures that are frequently applied for more traffic control devices by placard-bearing mothers and children picketing an intersection. Thus, judging from the extensive public interest in school safety, the problem would appear to be quite a serious one.

However, there is a more objective method of measuring the significance of the school safety problem—a method based upon statistical accident experience. Until recently there has been little substantial data available concerning overall accident experience, from which an objective evaluation of our present methods in school safety engineering could be made. Not only is it necessary to know how many accidents are happening; but also where, when and how they are occurring. Even this information does not convey an accurate representation of the problem. School area accident statistics have to be related to overall traffic accident conditions to provide the basis for a significant evaluation. Thus, another prerequisite for an adequate appraisal of the problem is an overall frame of reference through which the school safety problem can be viewed with proper perspective.

This need for basic facts has been apparent to many public agencies for some time. But only recently, with the development and widespread application of automatic data processing equipment, has it been possible to undertake a comprehensive study of the magnitude necessary to be statistically sound.

Scope of Study

The Los Angeles County Road Department has now completed the analysis and coding of 75,000 California Highway Patrol traffic accident reports on IBM punch cards, using a system especially designed to facilitate engineering analysis. This system is now being applied to countywide accident studies of various types as one phase of an overall program for improving the safety of the Los Angeles County street system. The program is under the sponsorship of the County Board of Supervisors and executed by the Road Department under the direction of Sam R. Kennedy, Road Commissioner.

A comprehensive school age pedestrian accident analysis was assigned a very high priority in this new program. This study was undertaken to evaluate the effectiveness of the present child pedestrian safety program. The results will be used to establish a factual basis with respect to future County policy regarding school age pedestrian protection. This paper summarizes the findings of this initial study, illustrating where, when and how school age pedestrian accidents are occurring. The analysis is based upon 1008 traffic accident reports involving school age pedestrians in the unincorporated areas of Los Angeles County during a four and one-third year period. It should be noted that the study includes all pedestrian accidents involving school age children, without limiting it to the vicinity of the schools. Thus, a broad base is provided in order to achieve the perspective needed for an overall evaluation of the problem. The analysis includes a study of accident distribution by location, type, severity, age and other factors.

Although the statistics developed by this study have been accumulated in only one region, the unincorporated portions of Los Angeles County are a composite of many types of areas and represent a total population of 1.2 million persons. Included are many communities that are heavily urbanized, some that are only partially urban in character, and some that are typically rural. The statistics may therefore be considered as generally typical of a large metropolitan area. However, it would be extremely valuable if similar studies were made in other jurisdictions.

No attempt will be made at this time to present a comprehensive analysis of the vast amount of data that has been compiled. The present discussion will concern only a few of the more significant aspects of the problem that have been revealed by the study. However, Plates A-N present in graphic form most of the detailed factual information that has been accumulated to date, so that the data is available for further research into other phases of the problem. It should be noted that all the plates except Plate B include only

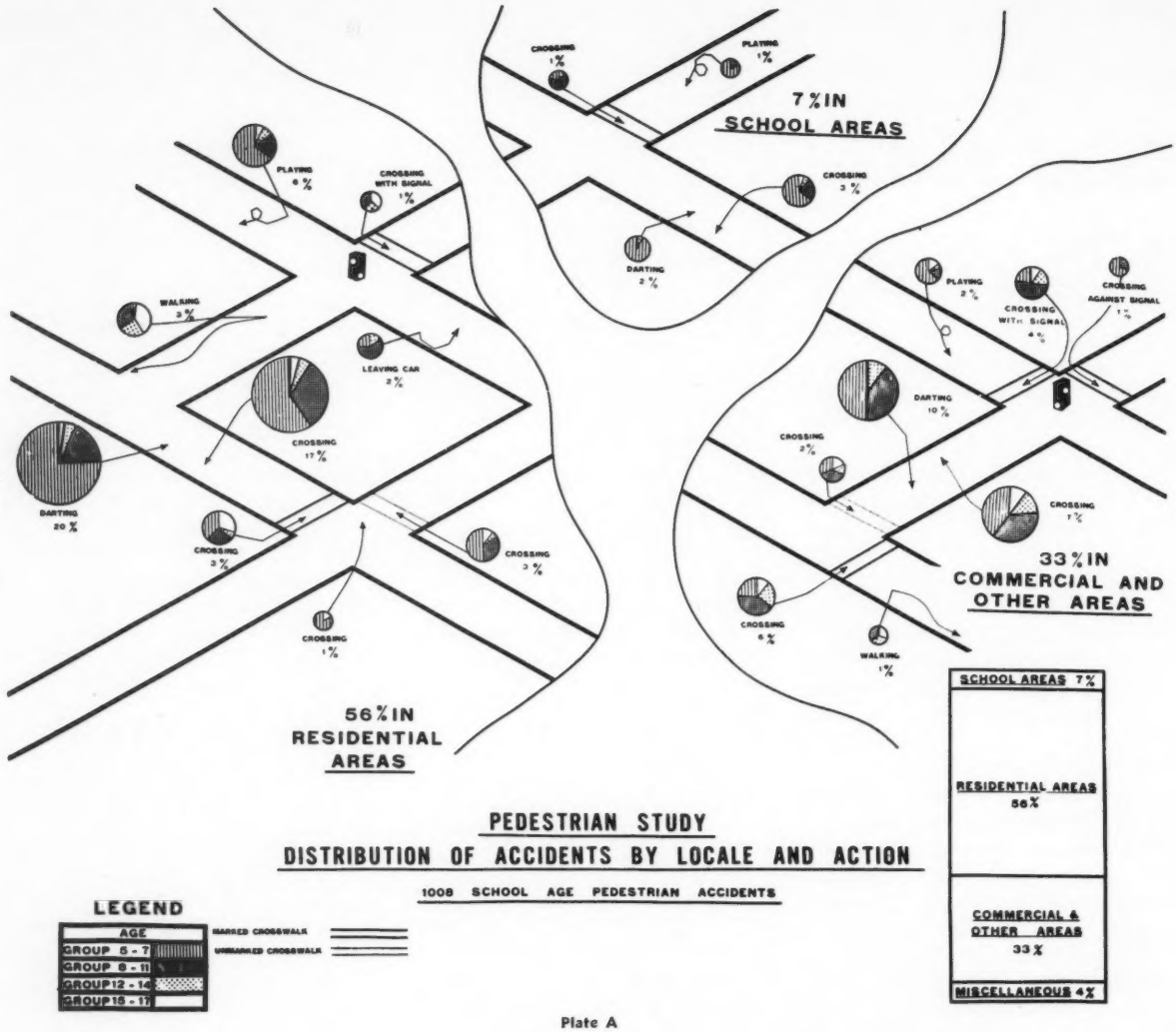


Plate A

school age pedestrian accidents and their distribution. Plate B presents the overall distribution of traffic accidents in Los Angeles County, indicating the relative significance of school age pedestrian accidents to all other pedestrian and vehicular accident categories. Accidents involving school age pedestrians represent 2.6 per cent of all traffic accidents and 4.2 per cent of the fatalities.

Effectiveness of Our School Safety Program

It is very significant that only 75 per cent of all school age pedestrian accidents are occurring in the vicinity of schools, with only 1 per cent occurring at school crossings (Plate A). It would thus appear that school child protection *at school crossings* is excellent. There is no doubt that the concentration of attention upon traffic safety in the vicinity of schools has been very effective in achieving the excellent safety record that we now have around schools. However, if there are any signs of complacency in regard to our excellent school safety record, the fact that 93 per cent of school age pedestrian accidents are occurring outside school areas indicates that much remains to be done in other directions. It is even possible that the concentration of effort upon the school area may have diverted attention from these other areas. In the future, it may be desirable to focus this attention in other directions where such concentrated effort may yield more substantial results in terms of accident reduction.

Another question which must be resolved is whether the present emphasis on "complete protection" at school crossings allows the child an opportunity to develop self-sufficiency and safety consciousness. When the child is outside the school environs, where he is not given the same degree of protection, is he prepared for the normal traffic situations that he must encounter? Are the effects of "complete protection" at school crosswalks contributing to a higher incidence of accidents outside school areas?

A parallel can be drawn with current medical practice in providing protection against disease. The accepted method of developing immunity to disease in children is the injection of small quantities of a vaccine or serum to foster the development of antibodies, which protect the body against the disease. Our current traffic safety practices are in direct contrast to this. When we attempt to completely protect our children from contact with traffic in the vicinity of the school, are they adequately prepared to exercise the

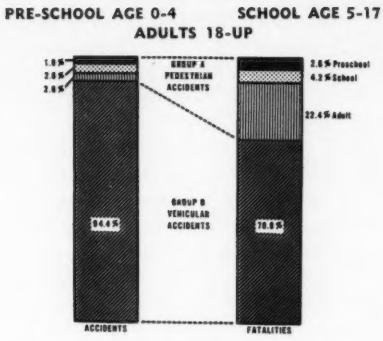


Plate B
Total Traffic Accident Distribution

necessary degree of caution after school hours and outside of school areas where 93 per cent of the accidents are happening? Since it is impossible to achieve the same degree of protection outside of school areas, it may be desirable that children be conditioned to develop a reasonable degree of caution and self-sufficiency under the more controlled environs of school areas so that they will be better prepared outside this environment.

A Balanced Safety Program

School age pedestrian protection, in its broadest sense, is the protection of school age pedestrians at all times and in all places where accidents are known to occur — not only in the vicinity of schools and during school hours. With this broader concept it is first necessary to analyze where, when and why these accidents are happening. Then it is possible to ascertain what corrective measures are applicable to each of the various categories of accidents. In this way a realistic accident prevention program can be evolved, based upon the problems that are found to exist.

The statistics indicate that 93 per cent of school age pedestrian accidents occur in residential, commercial and other non-school areas, and 99 per cent of the accidents occur elsewhere than in school crosswalks. The vast majority of accidents do not occur at intersections but at midblock locations (Plate F). Almost all of these midblock accidents are caused by darting into the street, crossing in the middle of the block and playing in the roadway (Plate G). The younger age groups predominate in these accident categories.

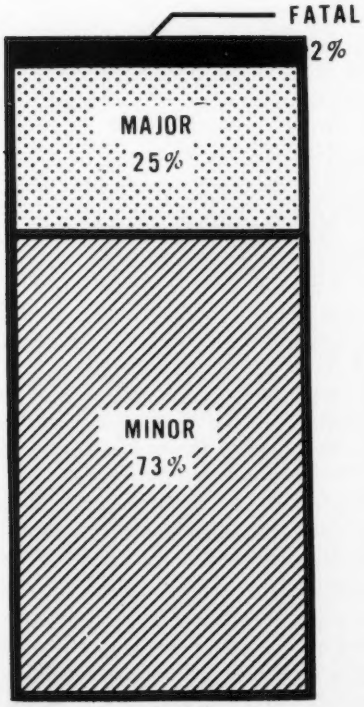


Plate C
Severity

Many of these accidents are attributable to the carelessness and erratic behaviour of the children. Although the improvement of pedestrian behavior is largely the responsibility of parents and educators, the immature child has basic limitations in judgment which cannot be completely overcome by training and discipline. It is therefore natural for the layman to demand more stringent curbs upon vehicular freedom, in the form of more traffic control devices, to make up for the natural deficiencies of the younger pedestrian. Therefore, one important area of investigation is the effectiveness of traffic control devices in supplying this extra protection.

Effects of Traffic Control Devices

Although our excellent school safety record is partially attributable to proper and uniform application of traffic control devices, the studies have indicated that more traffic control devices offer no panacea for the further reduction of pedestrian traffic accidents. In fact, the opposite may be true.

Some traffic controls tend to instill in the immature school age pedestrian a feeling of much greater security than actually exists. By assuming that the installation of a particular traffic control device has given him the right-of-way and is providing adequate protection, a child may be inclined to exercise less caution and take more chances than is warranted. This situation has been found to exist in numerous observance studies at intersections

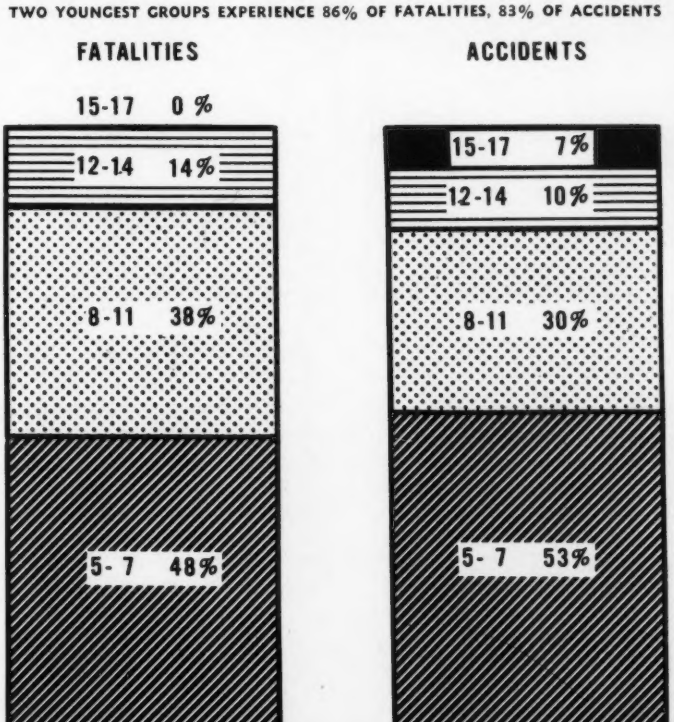


Plate D
Incidence of Accidents According to Age.

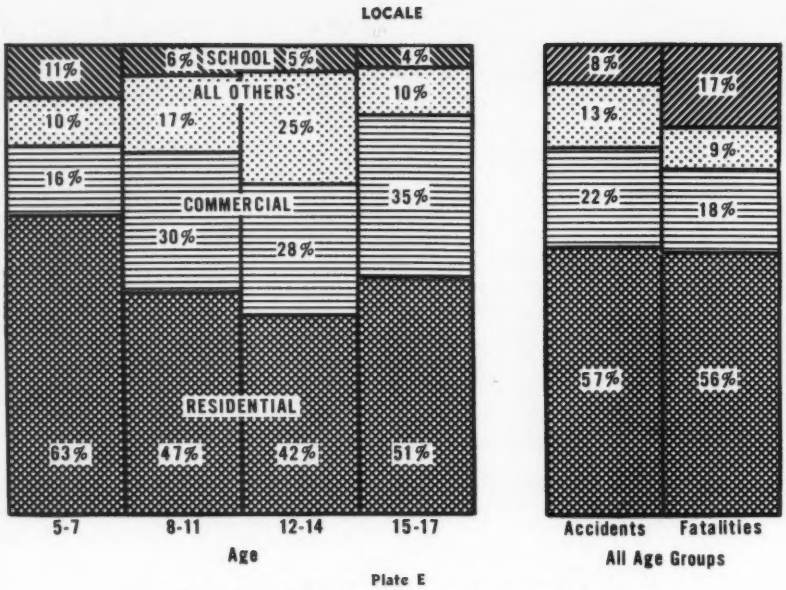


Plate E
Distribution of Accidents in the Various Age Groups by Locale.

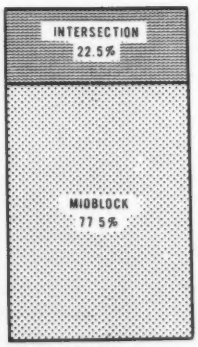


Plate F
Location of Accidents.

where STOP signs, crosswalks, traffic signals or other traffic devices have been installed. This false sense of security created by traffic control devices may frequently result in an increase of traffic accidents rather than a reduction.

This condition is illustrated by the detailed analysis of pedestrian accidents at various types of intersections in relation to the action of the vehicle (Plate K). These diagrams indicate that straight through vehicular movements were involved in the vast majority of all pedestrian intersection accidents. For purposes of this illustration, all vehicles approaching a near side crosswalk were interpreted as straight through vehicles in relation to that crosswalk. Turning movement accidents involved vehicles completing their turns and leaving the intersection. Although the preponderance of straight through accident types might be anticipated for non-signalized intersections, it is somewhat surprising that more than half of the pedestrian accidents at signalized intersections involved straight through vehicles. Supposedly, one of the principal advantages of signalization is definite assignment of right-of-way to control right angle conflicts; yet, right angle vehicular and pedestrian movements, which are assigned different signal phases, account for half the accidents. This might appear to indicate a high prevalence of signal violations by vehicles running the signal, or pedestrians crossing against the signal. However, the statistics indicate that 81 per cent of the accidents involved a pedestrian crossing legally with the signal (Plate H). Moreover, there were few major vehicular violations. One of the principal causes was late pedestrian crossing extending beyond the green phase, in conjunction with early vehicular starts while the pedestrian was still in the crosswalk. Carelessness and erratic behavior on the part of the pedestrian were again a contributing factor in these accidents.

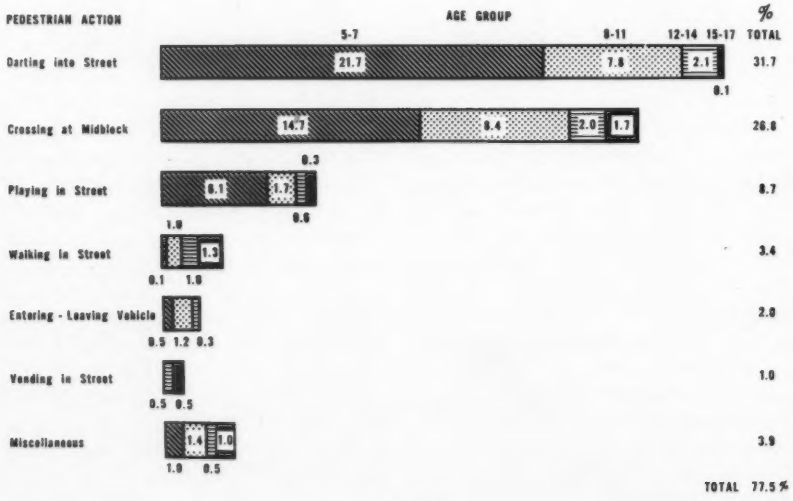


Plate G
Midblock Accidents

Turning movement conflicts with pedestrians accounted for half of the accidents at signalized intersections, with left turn conflict accidents three times as numerous as right turn accidents. At non-signalized intersections turning movement conflicts were responsible for only 15 per cent to 25 per cent of the accidents, with left turn conflicts again being the most numerous. Turning movement conflicts were thus more significant at signalized intersections than at non-signalized intersections. This is probably attributable to an inherent weakness of the usual types of signal control, whereby both turning vehicles and pedestrians are proceeding legally with a green signal. There are usually indications of a lessening of caution on the part of both the driver and pedestrian—both believing that the green signal represents a positive assignment of right-of-way, rather than merely an indication to proceed with caution. This general tendency toward a lessening of caution when pro-

ceeding with a green signal is also illustrated by a comparison of the pedestrian fatality rates at signalized and non-signalized intersections — 3 per cent as compared to 1 per cent (Plates H & J). These detailed studies have illustrated the limitations of traffic signals in the control of child pedestrian accidents.

Similar limitations have been found in the effectiveness of other traffic control devices in pedestrian accident control, especially when these devices are misused. The majority of drivers may be considered to be reasonable and prudent and have no intention of maliciously violating traffic regulations. However, when an unreasonable STOP sign or other restriction is imposed, it will frequently breed disrespect and result in flagrant violations of the regulation. Unfortunately, a child pedestrian recognizes that traffic control devices afford him certain right of way privileges which he learns to take advantage of. This false sense of security instilled by an unwarranted device will occasionally place the child in conflict with the motorist who has learned to violate the regulation, resulting in an unnecessary accident.

Disrespect for traffic devices will usually extend beyond the location where the device is unwarranted and breed similar violations at other locations, where the control is necessary for the safety of the driver and pedestrian. Thus, indiscriminate application of traffic devices will frequently contribute to a more serious accident toll at distant locations where disrespect is reaping its harvest. Each device has a definite purpose in traffic control and its effectiveness should not be jeopardized by unwise applications intended not to protect the driver, but to hinder him.

These studies have illustrated the need for better education of both adults and children regarding the limitations of traffic control devices, and the necessity for exercising considerable caution even at intersections where full protection appears to be provided. Present indications are that the increasing reliance upon more restrictive traffic control devices to achieve greater pedestrian safety is not justified by available statistics. However, this does not imply that traffic cannot be properly controlled or that the traffic engineer has exhausted his "bag of tricks."

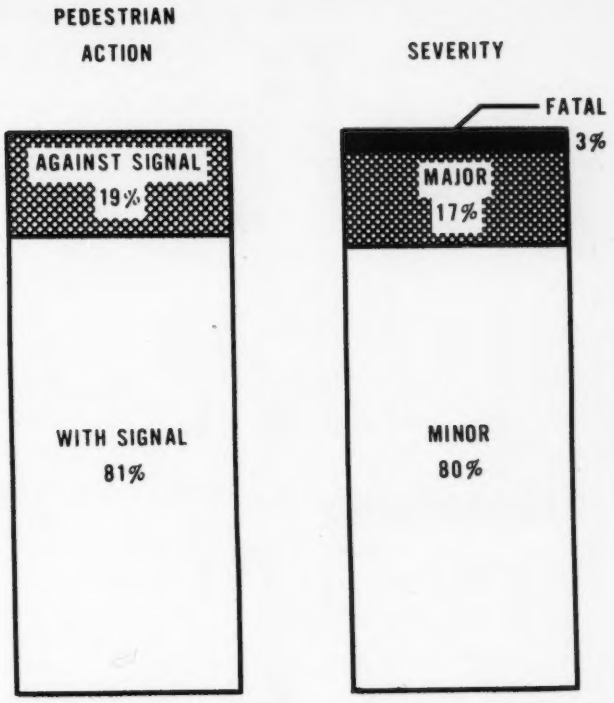
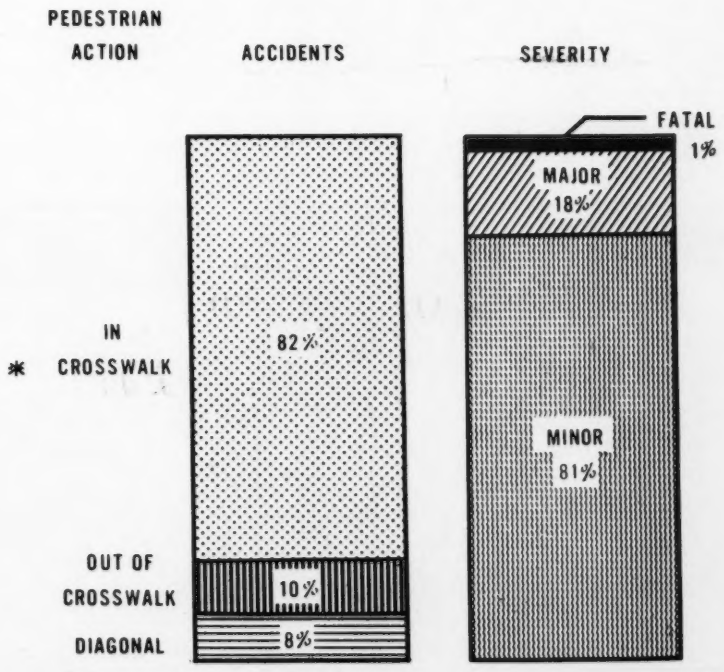


Plate H
Accidents in Crosswalks at Signalized Intersections.



* Includes all legal crosswalks, both marked and unmarked. [California Vehicle Code]

Plate J
Crossing Accidents at Non-Signalized Intersections.

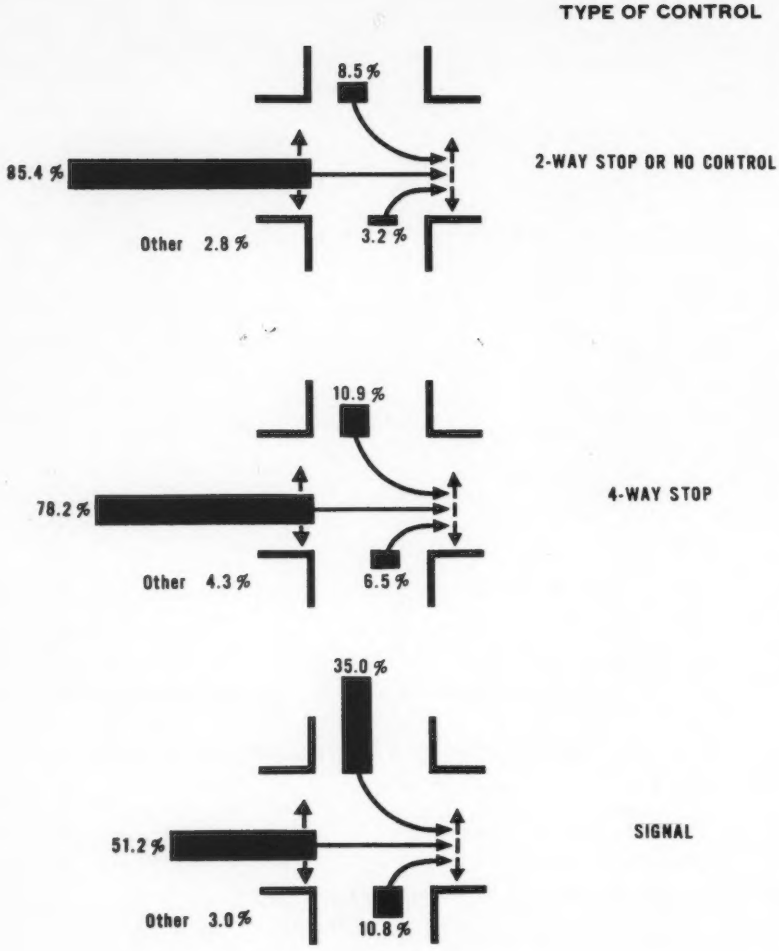


Plate K

Crossing Accidents at Intersections by Vehicle Action.

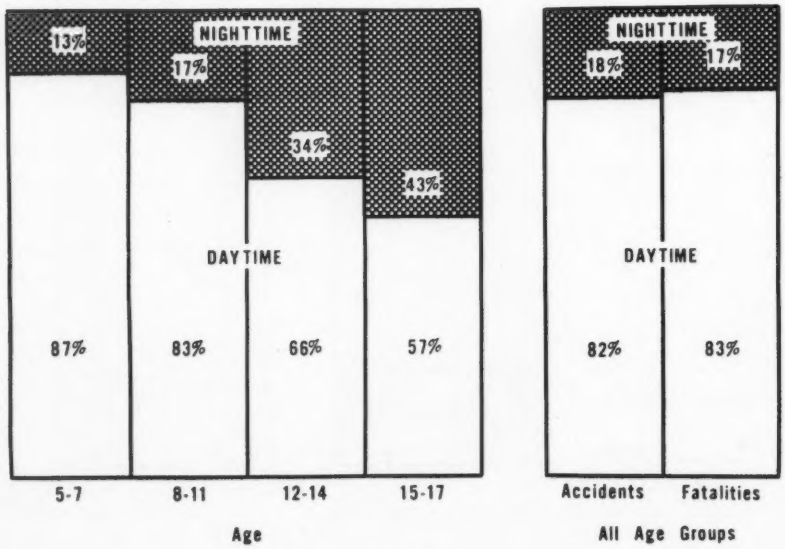


Plate L

Night or Day.

The "control" of vehicular traffic is usually interpreted by the layman to mean the placement of artificial impediments at intersections, intended to hinder the driver and slow him down. The use of STOP signs as speed control devices is a typical misapplication that is frequently requested. Fortunately, there are more constructive forms of traffic control available.

Other Methods of Increasing Safety

In seeking a realistic solution to the problem of child pedestrian safety, it is necessary to analyze the basic nature of the problem. In essence, the problem is created by erratic behavior on the part of immature children. Of course, the first and most obvious solution is the improvement of training and discipline. However, due to their inherent limitations, even well disciplined children will succumb occasionally to impulsive, careless actions which will place them in jeopardy. The probability of an accident occurring in such an instance is dependent upon whether there is a vehicle on the street at that time, and its speed of travel. The only way to reduce the likelihood of exposure to such accidents is to reduce the number and speed of vehicles using the local street. With approximately half of all child pedestrian accidents occurring midblock on local streets, it is appropriate to analyze the feasibility of accomplishing such reduction of exposure.

The latest functional street design principles recognize that the primary function of local streets is the accommodation of local access traffic at minimal speeds. New subdivision designs effectively eliminate through traffic from local streets, restricting it to the surrounding major arterials which are designed to handle large traffic volumes at moderate speeds. Interior access streets are specifically designed to be discontinuous with short runs, numerous culs-de-sac, bends and T-intersections to reduce traffic volume and speed. Access to the major highway is usually limited to a few well-designed access points, with special attention being directed to the elimination of bypass routes through the subdivision. Such built-in traffic control automatically eliminates the need for artificial deterrents on local streets.

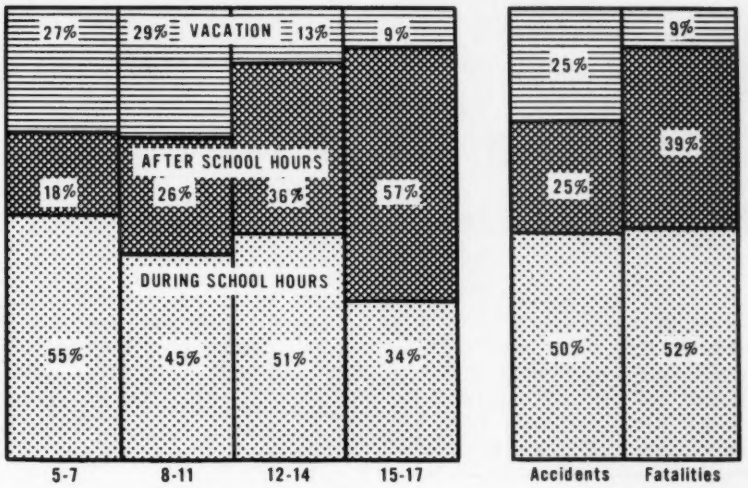
Although such design features are more readily incorporated in new street layouts, these principles may also be applied to correct existing conditions.

The redesign of existing local streets so as to eliminate through traffic can frequently be accomplished at very little expense by vacating portions of streets, providing elbows, culs-de-sac, and other features that will create discontinuity. Such renovation of existing streets patterns may appear to be a drastic measure; in reality, it constitutes only a modernization to current standards. Built-in safety can thus be provided for older neighborhoods as well as for newer subdivisions. However, before a heavily used bypass route is closed off, provision must be made for proper accommodation of the additional traffic on an alternate route utiilizing major arteries.

The reduction of pedestrian accident exposure on major streets is a more complex problem than on local streets, but it is not impossible of solution. Since the approach cannot be a reduction of vehicular traffic, it is necessary to explore the other possibility of reducing the frequency of pedestrian exposure on major highways, especially at midblock locations. Here again, it is appropriate to refer to our new subdivision design policies for a possible solution. The current trend in residential lot layout is toward backup and cul-de-sac design, whereby only the backs and sides of lots face the major highway. With a fence provided along the entire property line of the highway to eliminate midblock entering, pedestrians are forced to enter and cross the major highway only at a controlled intersection. By limiting the frequency of local access streets entering the major highway, the number of pedestrian exposure points may be further reduced. For existing conditions, any effective barriers which restrict pedestrian crossings to a minimum number of well controlled crossing locations will provide a greater degree of safety.

The reduction of vehicular exposure on local streets and the improved control of pedestrian movements on major highways are effective methods of traffic control that are now available to the engineer in coping with the problem of child pedestrian safety. There are, no doubt, other engineering solutions that can be suggested by detailed analysis of the data. However, the innovation of any new traffic control techniques which further restrict freedom of movement will encounter considerable opposition unless the objectives of such a program are properly presented and accepted by the public. Furthermore, in the process of analyzing the varied statistics, it has become apparent that many other aspects of the problem are beyond the scope of engineering. Neither the traffic engineer nor any other single governmental function can alone provide maximum safety for the child pedestrian.

INCIDENCE OF PEDESTRIAN ACCIDENTS DURING THE YEAR IN THE VARIOUS AGE GROUPS



DURING SCHOOL HOURS	8 A.M. to 5 P.M.	DURING SCHOOL YEAR SEPT. 10 - JUNE 15
AFTER SCHOOL HOURS	5 P.M. to 8 A.M.	DURING SCHOOL YEAR SEPT. 10 - JUNE 15
VACATION	ALL HOURS	NOT DURING SCHOOL YEAR JUNE 15 - SEPT. 10

Plate M
Accident Distribution by Time Period.

Joint Responsibility for Child Pedestrian Safety

School child protection is the joint responsibility of at least three governmental functions; the three E's—Education, Enforcement and Engineering are all vitally concerned with this problem. They should all be given an opportunity to digest and analyze the

(Continued on page 25)

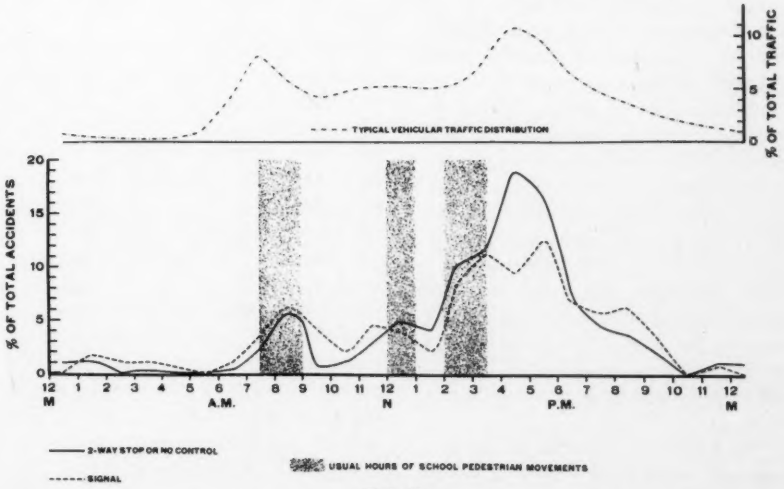

TYPICAL VEHICULAR TRAFFIC DISTRIBUTION
% OF TOTAL TRAFFIC
% OF TOTAL ACCIDENTS
12 M 1 2 3 4 5 6 7 8 9 10 11 12 N 1 2 3 4 5 6 7 8 9 10 11 12 M
A.M.
P.M.
2-WAY STOP OR NO CONTROL
SIGNAL
USUAL HOURS OF SCHOOL PEDESTRIAN MOVEMENTS

Plate N
Crossing Accidents at Intersections by Time of Day and Type of Control.

Limitations of Signal Spacings in a Coordinated System on a High Speed, Dual Highway

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Condensed from a thesis submitted in partial fulfilment of requirements for a certificate from the Yale Bureau of Highway Traffic.

In the case of four lane, divided highways with unlimited access, high volume, high speed traffic frequently necessitates the establishment of some form of control(s). It is often the case that sufficient enforcement cannot be feasibly supplied, grade separations are not economically justified and there is insufficient room for provision of speed change lanes in the areas of extensive roadside development.

Such a case occurred on an 11.4 mile section of State Route 15 in Connecticut known as the "Berlin Turnpike." This dual lane highway with unlimited access extends northerly from the "Wilbur Cross Parkway" in Meriden to the town of Wethersfield, just south of Hartford. Numerous commercial and industrial establishments are located along the major portion of this road with practically no control of access at these locations. Although the accident frequency was not too great for the large volumes of traffic handled, the rate of unusually severe accidents resulted in the institution of a coordinated system of traffic signals, primarily to control speed and facilitate access. This was accomplished as a part of a comprehensive program which included the elimination of excess median cuts and the construction of deceleration lanes along the median at other openings. The latter also provided storage for left turn vehicles waiting for a gap in opposing traffic at intermediate locations, or for the left turn phase at signalized intersections.

The selection of traffic signal spacings was made on the basis of volume counts, speed studies, accident investigations and the general application of traffic engineering principles. Subsequent accident and operational studies have indicated the success of the project; accident severity has been reduced, vehicle speeds have been stabilized and access to the traffic stream has been facilitated, both at signal locations and at intermediate points.

Whereas the *Manual on Uniform Traffic Control Devices* recommends signal spacings of 1200 feet or less in coordinated systems and 20 MPH-30 MPH speeds of progression as general limitations, the "Turnpike" is operating in an efficient manner with signals spaced as far apart as 5750 feet and with through bands of 40 seconds moving at speeds of 45 MPH. It was this successful deviation from previously accepted standards that indicated the necessity for new theories which can be applied to other highways in similar cases.

The shorter the spacings in a coordinated system, the more positive the control, the smaller the delays. However, they result in a higher initial cost, larger maintenance problem and a greater probability of rear-end type collisions.

The opposite is generally true for long spacings but then the problem of providing access to the traffic stream attains greater importance. It seemed that there must be a critical distance or range of distances which, when used as a general guide, result in the highest benefit-cost ratio. This then was the problem: *To determine the maximum practical spacing for traffic signals in a coordinated system on a dual highway carrying high volume, high speed traffic in a rural area which will permit control of speed and provide sufficient access to the highway at and between signalized intersections.*

Analysis of the various factors involved in the movement of traffic on a high speed, dual highway indicated three basic operational functions with regard to signalization.

a. Control of speed directly by a progressive signal system and indirectly via the platooning of vehicles.
b. Provision for access to the traffic stream at main intersections and at intermediate streets and drives.
c. Movement of large volumes of traffic with a minimum of delay and a maximum of safety.

The desirable headway is that time interval which would permit a vehicle, entering the highway at some intermediate point, to accelerate to the running speed of through traffic without interfering with same. The necessity for this long headway exists on the Berlin Turnpike since almost every entry to the highway other than at signalized intersections requires the motorist to turn right and accelerate on the traveled portion of the highway. The range of accepted gaps is from 6 seconds up, with an optimum value of 13 seconds. Evaluation of the headways in this 6 second to 13 second range would then demonstrate the quality of access at the pertinent distance from a signal and at the observed volume of traffic. Actual selection of the optimum signal spacing will be facilitated once a definite relationship is established between *headway distribution* and *distance from signal.*

Further significance of signal effect can be shown by the comparison of observed headways with expected headways as can be predicted from a random distribution at the observed volume of vehicles.

Test Sites

Sites selected for the procurement of data were in a 4500 foot section of the Berlin Turnpike in the vicinity of

TABLE I

SITE LOCATIONS

STATION	DISTANCE FROM MIDDLETOWN ROAD	DISTANCE FROM SIGNAL	LANE
1	2000 feet north	2000 feet	N-bnd
2	1800 feet north	4000 feet	S-bnd
3	200 feet south	6000 feet[1]	S-bnd
4	2200 feet south	8000 feet[1]	S-bnd

1. Signal at Middletown Road was put on "flashing operation" during observation periods at Stations 3 and 4 to achieve indicated distances from an operating signal.

Middletown Road in the town of Berlin some four miles north of the Wilbur Cross Parkway in Meriden. This area was chosen because of the relative lack of entrance drives, negligible grades, near-tangent alignment, minor roadside development and its proximity to the center of the signal system. It should also be noted that no motorist passing through any of the test sites could see the next signal ahead of him. Specific locations of the test sites are shown in Table I.

Route 15 (Berlin Turnpike) in the subject area is a dual highway with two concrete surface, travel lanes either side of a grassed and shrubbed median. Parkway curbs and 2 foot, concrete gutter strips border the divider. Outer bituminous shoulders average 8 feet wide. Both the travel lanes and shoulder areas were in good condition at the time of the field tests. The only cut in the median within the test area is at the intersection of Middletown Road where left turn deceleration and storage lanes are provided.

Northerly from Middletown Road to Stations 1 & 2 the highway is nearly level and follows a one degree curve to the left. The south approach to Station 3 involves negligible alignment and gradient but the approach to Station 4 is located on an ascending grade of 2.36 per cent. The latter is of insufficient magnitude to warrant consideration in the final analysis.

The fixed time, progressive signal system as now in operation has a basic 85 second cycle with about 70 seconds "Go Time" maximum on the highway.

Additional sites selected for comparative speed studies were on the Wilbur Cross Parkway and on Route 5 at 1000-3000 feet south of the Turnpike. The former is a limited access route carrying only pasenger vehicles and Route 5 at the subject locale is a two lane, two directional road with unlimited access and open to all vehicles.

Character of Traffic

The Berlin Turnpike is a main link in State Route 15 with its northern terminus in the greater Hartford area and connected to the Charter Oak Bridge. The Pike accommodates some 30,000 vehicles each day and a major portion of its length is flanked with diners, motels, gas stations and other commercial and industrial establishments.

Weather

Field observations were conducted Friday, January 6, 1956 between the hours of 1:00-5:00 P.M. Weather at the time was cold and sunny; pavement and shoulders were dry and free from sand and other debris.

Analysis of Data

Vehicle Speeds

Average and 85 percentile speeds as calculated from field observations at the test sites revealed little variation within the confines of the signal system but a marked change after traffic leaves the Turnpike. (See Table II below.)

The range in average speeds of 0.9 MPH between Stations 1-4 incl. is of minor magnitude and indicates the effectiveness of speed control as furnished by the signal system. The increase of 6 MPH in average speeds soon after the motorists leaves the Turnpike and enter the Parkway demonstrates the desire for higher speeds and again, indirectly, the success of the speed control on the Turnpike.[2]

The drop of 2 ± MPH on Route 5 is attributed to the geometrics[3] of the road, the 40 MPH posted speed limit and the fact that all commercial ve-

2. Some credence is given the fact that no commercial vehicles are permitted on the parkway but this is of lesser importance when one considers that modern trucking equipment is well capable of, and travels at, high speeds when permitted.

3. Two lane, two directional road.

TABLE II

SPEED SUMMARY

STATION	NO. OBS.	AV. SPEED	85% SPEED	PACE
1	209	46.9 MPH	52.1 MPH	40-50 MPH
2	212	47.1 MPH	52.9 MPH	41-51 MPH
3	196	46.2 MPH	50.0 MPH	40-50 MPH
4	140	46.5 MPH	51.8 MPH	41-51 MPH
W. C. Pkwy.	201	53.0 MPH	58.1 MPH	48-58 MPH
Rt. Conn. 5	202	44.4 MPH	49.3 MPH	39-49 MPH

TABLE III

HEADWAYS LESS THAN 9 SECONDS

	ARITHMETIC MEAN (sec.)			% OF TOTAL	
STATION	OBS.	THEORETICAL	CHANGE	OBS.	THEORETICAL
1	1.5	3.4	—1.9	88	87.5
2	2.2	3.4	—1.2	90	89
3	2.7	3.5	— .8	88	84
4	2.8	3.6	— .8	86	82

TABLE IV

HEADWAYS OF 6 SECONDS AND GREATER

	ARITHMETIC MEAN (sec.)		% OF TOTAL	
STATION	OBS.	THEORETICAL	OBS.	THEORETICAL
1	19.5	10.7	14	29
2	13.5	9.5	16	27.5
3	11.6	10.4	23	32
4	11.6	10.7	26	35

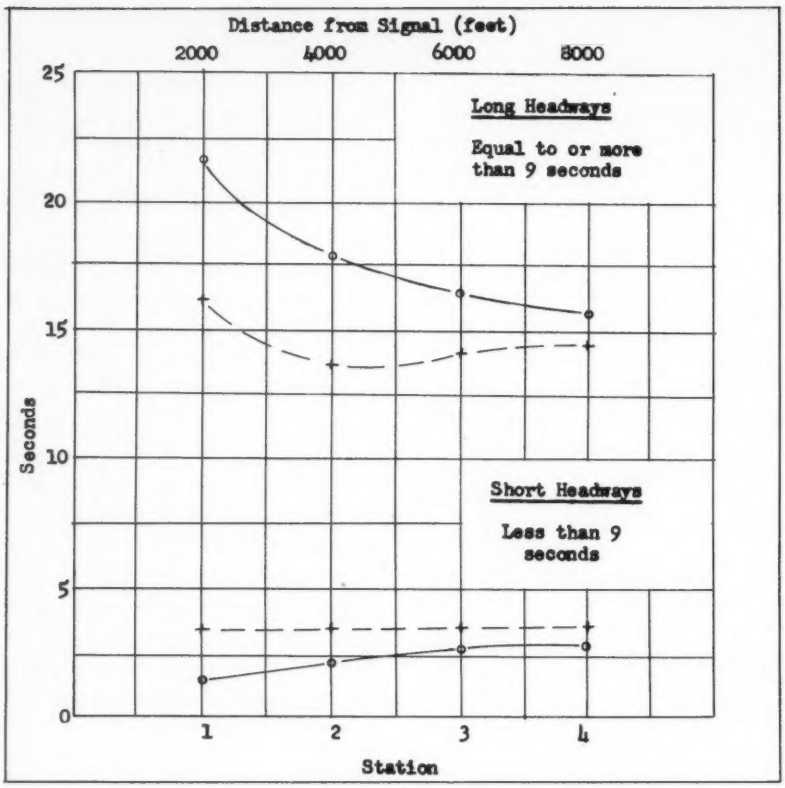


Figure 1
Means of Headways.

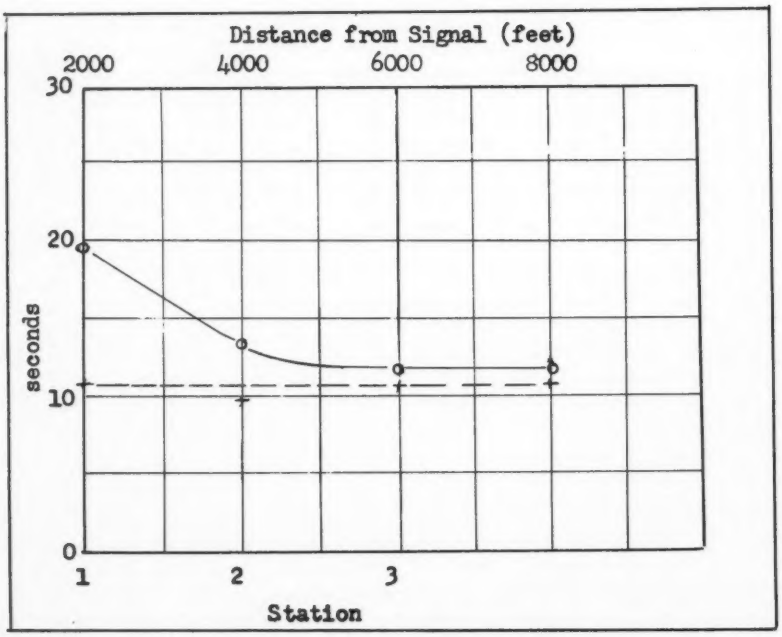


Figure 2
Means of Headways Six Seconds or Greater.

hicles (southbound) on the Pike exit via this road.

Considering speed control as results from queue movement of vehicles, a comparison was made of arithmetic means of headways below 9 seconds with those of a similar nature for random distribution. These values are shown in Table III.

Drivers are affected by time spacings of 9 seconds or less between vehicles and the shorter the gaps, the greater the effect. *Table III shows the first indication of variance of effect of traffic signals with regard to distance from same.* The percentage of total headways under 9 seconds varied but slightly although there was a significantly greater change in mean length of headways (increase) from Station 1 to 2 as compared to Stations 3 and 4. (see Figure 1)

The lack of change between Stations 3 and 4 and the degree of variance from randomness at these points is believed to be due to the residual effect of the signals; small but still measurable at these extended distances. This signifies that relatively minor benefit is to be derived from signal spacings of 6000 feet or greater but does not clarify what lesser distance is the most practical.

Access

Derivation of the arithmetic means of headways of six seconds and greater, the value of which has been previously defined, reveals a curvilinear relationship of headways with distance from signals as compared to a linear relationship from random distribution of the observed volumes of traffic. This is shown in Table IV and Figure 2.

Again platoon movement is demonstrated as resulting from the signalization; this time by the lesser frequency but greater mean of headways of 6 seconds and longer and conversely by the higher per cent of short headways. Evaluation of the aforementioned data with regard to access reveals significant fact. *The optimum headway of 13 seconds, considered as an average value, occurs at Station 2 or some point immediately beyond.* Also, at Stations 3 and 4 the increase in the *mean of the acceptable gaps*, as effected by the signals, was negligible over those which would have resulted under random distribution for the observed traffic volumes. We now have a *second indication of the maximum practical signal*

spacing. This value, more definite than the first, is *about 4000 feet*. This conclusion is further supported by the increase in number of headways of 15 seconds and over as provided by the signals at the observed volumes of traffic. These are shown in Table V.

TABLE V

NUMBER OF HEADWAYS
15 SECONDS AND GREATER

STATION	OBSERVED	THEORETICAL
1	23	13
2	19	14
3	21	20
4	15	23

Here again we see the point of diminishing returns about 4000 feet or just beyond.

Pursuing this matter of access further, as related to the distribution of traffic, an examination was made of the arrival of traffic at each test site. Chi Square tests based on vehicle arrivals in 15 second intervals provides a fourth correlation which is quite similar in pattern to the others. (See Figures 3 and Table VI)

The lower the level of significance, the greater the demonstrated effect of the signals. An inspection of Figure 3 reveals that *the point of diminishing returns occurs in the vicinity of 4600 feet*. It should be understood that these tests were conducted to measure the randomness of the distribution of traffic. (See Figures 4, 5, 6 and 7)

Quality of Transmission

Investigation of the quality of transmission as evidenced by density, speed and lane occupancy leads to the conclusion that traffic moved swiftly and orderly at all test sites. Average speeds varied little, as previously discussed, and lane occupancy (Table VII) ranged from 49.9 per cent of total volume traveling in the left lane, near the median strip, at Station 1 to 40.8 per cent at Station 4.

The percentage of commercial vehicles varied somewhat between periods of observation but revealed nothing of significance. Actually, the higher proportion of commercial vehicles at Station 3, if it were significant, would have tended to interfere with the breakdown of traffic distribution toward random at that Station and would not have permitted the highly indicative correlations presented in previous paragraphs.

TABLE VI

TABLE OF CHI SQUARE VALUES

		STA. 1	STA. 2	STA. 3	STA. 4
Chi Square		132.5	83.39	20.86	14.19
Level of Significance	less than	.001	.001	.001	.01-.02

TABLE VII

STATION	% OF VEHICLES IN LEFT LANE	% OF VEHICLES COMMERCIAL
1	49.9	9.7
2	44.3	8.9
3	41.5	19.8
4	40.8	11.5

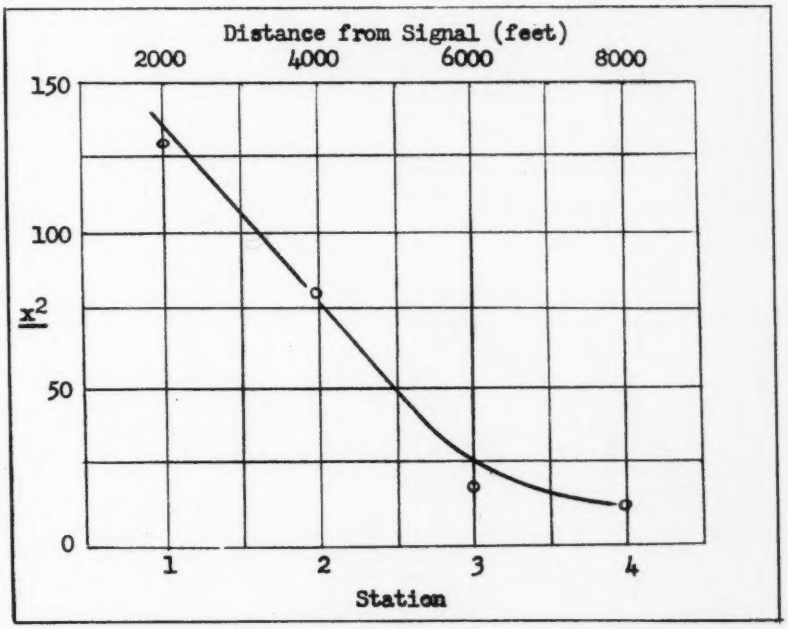


Figure 3
Chi Square as a Measure of Signal Effect.

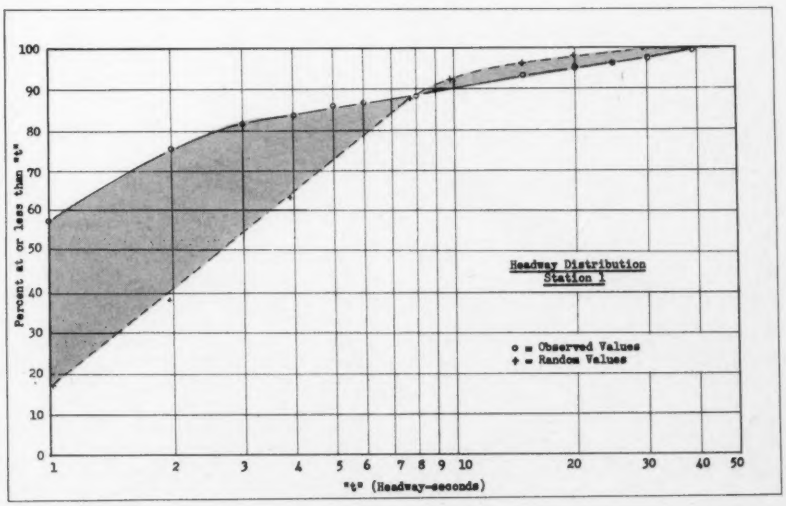


Figure 4

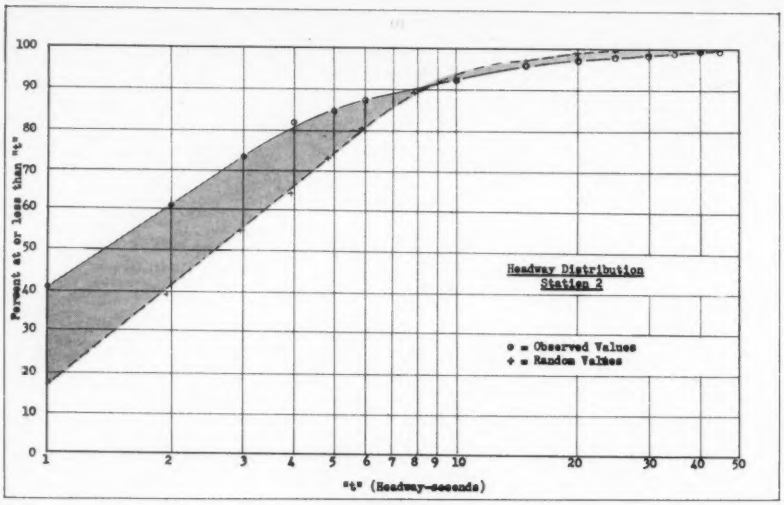


Figure 5

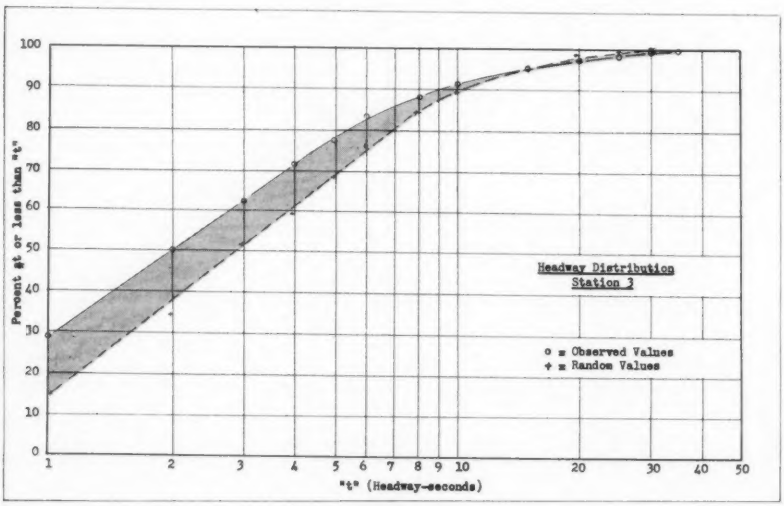


Figure 6

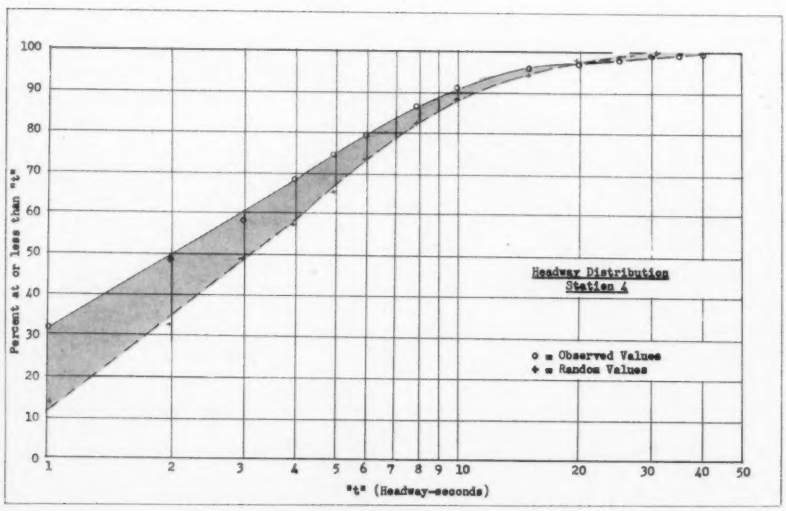


Figure 7

In reviewing the analyses, one should bear in mind that the hourly volumes of traffic observed in the two lanes at each site (764-920 vph) were below the maximum practical capacity for one lane (1000 vph). The possibility and probability of breakdown of platoon or queue movement of vehicles varies inversely with the density. Desire for lane change increases with volume but opportunities for same decrease with volume.

Conclusions

The more positive correlations are those based on the provision of adequate headways for access to the traffic stream at intermediate points, and deviation from random distribution. *The maximum practical signal spacing as suggested by these analyses is 4000-4600 feet at the observed volumes of traffic.*

Utilization of a range of distances rather than a single value is considered advisable for the following reasons:

a. Derivation of the exact relation between signal spacings and effects of same would entail many more than the four test sites permissible under the confines of this study.

b. The operation of the moving vehicle is subject to the responses of the motorist to various stimuli and are measurable only to within certain limitations.

Selection of a maximum practical signal spacing of some three and a half times that indicated as a maximum by the *Manual on Uniform Traffic Control Devices* and almost twice the liberal maximum noted in the *Traffic Engineering Handbook*[4] seems to be a rather bold step but is believed well substantiated. A practical evaluation of the conclusion would be a comparison of the proposed maximum spacings with those of a successfully operating system of a similar nature. Such comparisons can be made on the Berlin Turnpike which has sixteen signalized intersections[5] in both the northbound and southbound lanes. The longer of the two sections is the northbound section where the *average spacing of signals is 3800 feet.* Of the three spacings

4. Institute of Traffic Engineers, p. 221.

5. Two signals are within a few hundred feet of each other in both northbound and southbound circuits and are in a single intersectional area. Each pair is considered as only one of the sixteen noted.

Looking North from Station No. 1.

Looking South from Station No. 2.

Looking South through Middletown Road to Station No. 3.

Looking South from Station No. 4.

greater than the maximum practical limit of 4600 feet suggested by this study, two of the signals are visible to approaching motorists from a distance of 2000 feet or more. Relatively numerous delays and high accident frequencies have been noted at the third location which affords a sight distance to approaching motorists of only some 1100 feet.

PEDESTRIAN SAFETY

(Continued from page 19)

factual data that is available so that a coordinated reevaluation can be made of our present policies. Many of the issues that have been raised are highly controversial and it is hoped that they are sufficiently provocative to arouse extensive discussion of these fundamental concepts. The final objective of this effort should be the development and implementation of a balanced program of school age pedestrian protection based upon the problem as it exists.

Traffic News

Earl Hall Appointed Hoffman Award Judge

W. Earl Hall, editor of the Mason City, Iowa, *Globe-Gazette*, has accepted appointment to the Board of Judges for the Paul Gray Hoffman Award for highway safety, it was announced today by the Automotive Safety Foundation.

Mr. Hall will fill the vacancy on the Board created by the recent death of Arthur T. Vanderbilt, Chief Justice of the New Jersey Supreme Court. An active civic leader in traffic safety for more than three decades, Mr. Hall himself has received numerous state and national honors for distinguished service in this field.

Other members of the Board of Judges are General Alfred M. Gruenther, President, American Red Cross; Dr. John A. Hannah, President, Michigan State University; Mrs. Raymond B. Sayre, Chairman, Women's Group, The President's Committee for Traffic Safety; and Herschel D. Newsom, Master, The National Grange.

The Paul Gray Hoffman Award, established last April, will honor engineers, educators, enforcement officials, organization personnel and others engaged professionally in highway safety. One recipient will be chosen annually for 10 years for outstanding achievement. The deadline for submission of nominations to the Foundation for the 1957 award is September 1.

Wiley Cited for Five Years as Traffic Commissioner

Sixteen leading New York City civic associations recently presented Traffic Commissioner T. T. Wiley with a certificate of appreciation for his contributions towards increased safety and traffic congestion relief for the city during the five years since he was appointed Commissioner by Mayor Impellitteri in August 1952.

The presentation was made on the "Citizens Union Searchlight" television and radio program over Stations WRCA and WRCA-TV by Milton M. Bergerman, Chairman of the Citizens Union, on behalf of the participating organizations.

The certificate cited Wiley's numerous traffic programs such as school safety, traffic signal timing and modernization, off-street and metered parking and pedestrian control signals as having made a substantial contribution towards improved traffic safety and the alleviation of traffic congestion in New York City.

The citation and the organizations joining in the tribute were as follows:

CERTIFICATE OF RECOGNITION AND APPRECIATION
to
T. T. WILEY
COMMISSIONER OF TRAFFIC
of the
CITY OF NEW YORK

WHEREAS, during his five years as Traffic Commissioner, T. T. Wiley has accelerated the school traffic safety program which now protects 1,360,000 New York City pupils, attending over 1,100 schools throughout the City;

WHEREAS he inaugurated an off-street parking program which will provide space for 17,000,000 shoppers commuters and short-term parkers per year;

WHEREAS his signal modernization campaign has caused thousands of modernized signals to be erected, thereby contributing to greater traffic safety and a smoother flow of traffic;

WHEREAS more than 90,000,000 shoppers and parkers a year can now be accommodated as a result of the largest parking meter program in the United States;

WHEREAS over 500 pedestrian control signals have been installed at major intersections throughout the City, and

WHEREAS these and other major improvements he has instituted have made a substantial contribution towards greater traffic safety and the alleviation of traffic congestion in the City,

NOW, THEREFORE BE IT RESOLVED That the undersigned organizations gratefully present this certificate in appreciation of his outstanding service to the City of New York.
Citizens Union of the City of New York
Greater New York Safety Council
Automobile Club of New York

(Continued on page 28)

for HIGHWAY ENGINEERS only...

D. O. OPSTAD,
General Sales Manager,
Reflective Products Division, Minnesota Mining & Mfg. Co., St. Paul 6, Minnesota.

An old adage, revised to highway engineer language, could read: A sign worth having is worth having 24 hours a day.

The importance of reflectivity today is pretty widely accepted. It does simplify nighttime driving, and it does give a greater measure of safety. The advertisement on the next page of this magazine demonstrated these facts that you know so well to readers of U. S. News and World Report, September 27 issue.

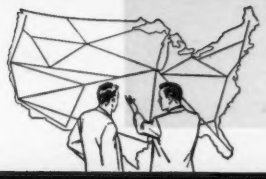
Reflectivity, however, as we like to think of it, is only one big value of our product, "Scotchlite" Reflective Sheeting. For this widely known and widely used quality signing material gives you more than just this one feature.

Judge it yourself against other types of reflective materials for desirable characteristics such as visibility, legibility, effectiveness when wet, angularity, ease of maintenance, durability, sign production ease, day and night color or *any* quality a truly modern traffic sign should possess.

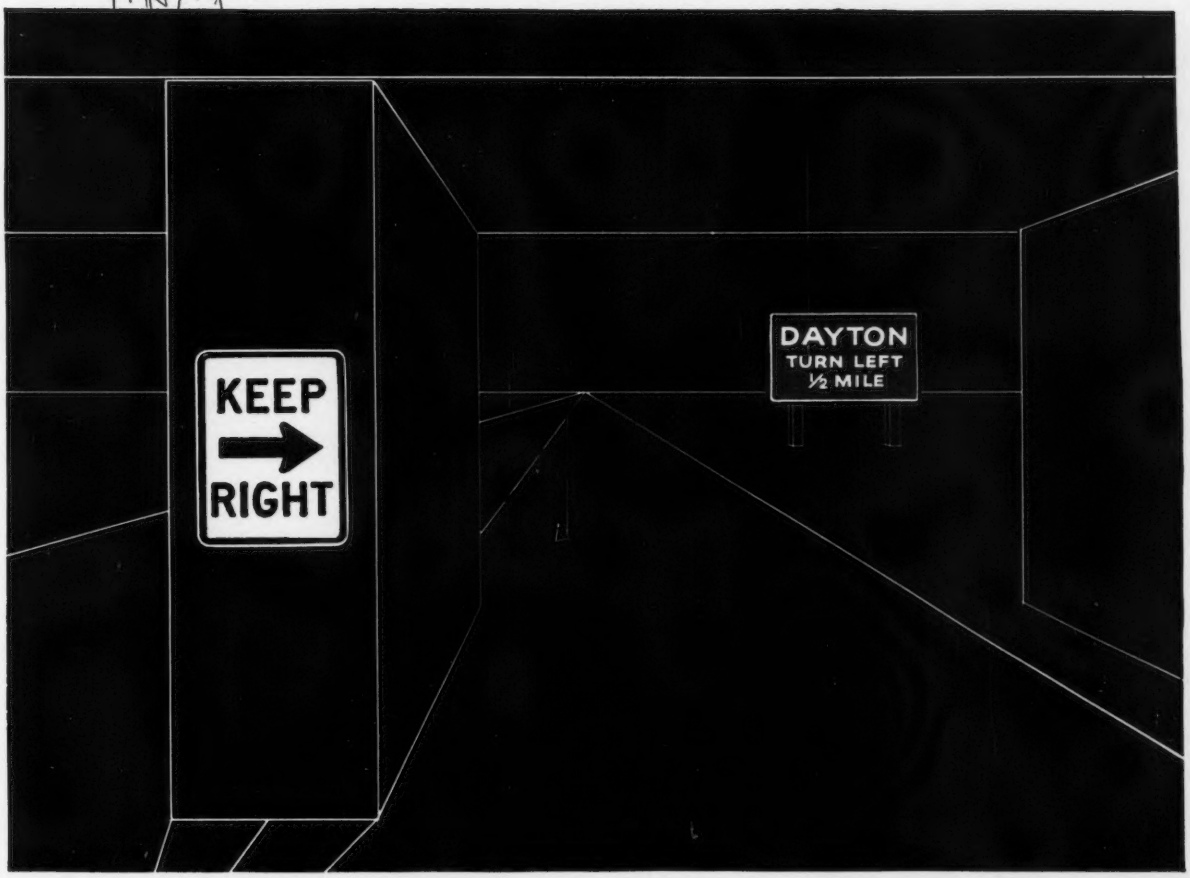
On any count, a sign of "Scotchlite" Sheeting gives you the kind of performance you want. Why not think about it. Then ask your "Scotchlite" Sheeting Representative to help chart a course for reflective safety throughout your area. His professional assistance is yours for the asking.

Sincerely,

D. O. Opstad



While highway engineers are changing the face of America...



New traffic signs simplify your nighttime driving now!

At night, when you need the help of traffic signs most, you should be able to see them at least as easily as you can by day. With dramatic traffic signs like these above, you can.

They are made of "Scotchlite" Reflective Sheeting, a material that reflects the full message of any sign in vivid color when caught by your headlight beam. You can see the complete sign easily in any weather and from any angle of approach. No other traffic signs today can bring such safety and simplicity to your nighttime driving.

You may already have these modern signs guarding your safety. But, if you haven't, write to your mayor, governor or highway commissioner. Ask him to investigate the simplicity and safety of easy-to-see signs of "Scotchlite" Reflective Sheeting.

REG. U. S. PAT. OFF

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The term "Scotchlite" is a registered trademark of Minnesota Mining & Mfg. Co., St. Paul 6, Minn. General Export: 99 Park Ave., New York 16, N. Y. In Canada: P. O. Box 757, London, Ontario.

Washington uses signs of "Scotchlite" Sheeting for safety day and night!

(Continued from page 26)

Avenue of the Americas Association
Brooklyn Chamber of Commerce
Chamber of Commerce of the Borough of Queens
Citizens' Housing and Planning Council of New York
Commerce and Industry Association of New York
Downtown Brooklyn Association
New York Board of Trade
New York Chamber of Commerce
Regional Plan Association
The Bronx Chamber of Commerce
Uptown Chamber of Commerce
West Side Association of Commerce
Women's City Club of New York
August 4, 1957

2100 Miles of Toll Roads Incorporated into Interstate System

Twenty-one hundred miles of toll roads in 15 states have been included in the National System of Interstate and Defense Highways, Federal Highway Administrator Bertram D. Tallamy has announced. These inclusions have been recommended by the state highway departments and approved by the U. S. Department of Commerce's Bureau of Public Roads, which Mr. Tallamy heads.

The 2,102 miles of toll roads, including 1,837 miles now in operation, represent only about five per cent of the total 41,000-mile length of the Interstate System.

The West Virginia Turnpike and Pennsylvania's Northeast Turnpike Extension were excluded from consideration since they do not lie along the general location lines of the Interstate System, the BPR said. Only a short section of the New Jersey Turnpike was recommended by the State for inclusion in the system.

Inclusion of the 2,102 miles of toll roads in the Interstate System will not affect their status as toll roads. The Federal-Aid Highway Act of 1956 permits this, although no Federal-aid funds may be used for their improvement. The 1956 Act declared it to be the intent and policy of the Congress to determine whether or not the Federal Government should reimburse the states for toll roads included in the Interstate System. The Bureau of Public Roads has been called upon to report the costs of such reimbursements, by next January, but the Congress will decide if reimbursements are to be made and by what methods and in what amounts.

A list of the toll roads approved for inclusion in the Interstate System follows. Those prefixed with an asterisk are now in operation.

Connecticut Turnpike, 98 miles: The section from the New York State line to Old Lyme, except the section at New Haven.

**Florida: Sunshine State Parkway, 41 miles:* The northern portion, from Fort Pierce to Palm Beach.

Illinois: North Illinois Turnpike (Chicago-Rockford-Beloit), 47 miles: The northern portion, from south of Barrington to near Beloit.

Illinois: Tri-State Turnpike, 73 miles: From Calumet Expressway west and north around Chicago to the Wisconsin State line near U. S. 41, including a five-mile spur near Deerfield to Edens Expressway.

**Indiana Turnpike, 151 miles:* The entire route from the Ohio State line to the Illinois State line.

**Kansas Turnpike, 184 miles:* from Kansas City to Topeka and from Emporia to the Oklahoma State line (the entire route except the Topeka-Emporia section).

**Kentucky Turnpike, 40 miles:* The entire route from Louisville to Elizabethtown.

**Maine Turnpike, 60 miles:* From Kittery to northwest of Portland and from Gardiner to Augusta (the entire route except the Portland-Gardiner section).

**Massachusetts Turnpike, 123 miles:* From Boston to East Lee (the entire route except a short section at the west end).

**New Hampshire Turnpike, 15 miles:* The entire route from Seabrook to Portsmouth.

**New Jersey Turnpike, 8 miles:* The section from Newark Airport to Holland Tunnel.

**New York Thruway, 506 miles:* The entire route from Yonkers to the Pennsylvania State line near Erie.

New York: Niagara Thruway, 8 miles: A section in Buffalo.

New York: New England Thruway, 4 miles: A section in New Rochelle.

**Ohio Turnpike, 173 miles:* From the Indiana State line to southwest of Cleveland and from west of Youngstown to the Pennsylvania State line (the entire route except the Cleveland-Youngstown section).

**Oklahoma: Turner Turnpike, 177 miles:* The entire route from Oklahoma City to the Missouri State line near Joplin.

**Pennsylvania Turnpike, 359 miles:* From the Ohio State line to Bristol (the entire route except a short section at the eastern end).

Virginia: The Richmond-Petersburg toll road, 35 miles: The entire route from Richmond to Petersburg.

President's Committee Schedules Four Conferences for 1958

Civic leaders from every State will be urged to become more active in organizing support for measures authorities consider most essential for improved traffic safety at a series of conferences next spring in four major regions.

The conferences are sponsored by the President's Committee for Traffic Safety, of which Harlow H. Curtice, president of General Motros, is chairman.

They will be held April 1 and 2 in Chicago, April 8 and 9 in San Francisco, April 15 and 16 in Atlantic City, and May 29 and 30 in Miami Beach. Approximately a thousand persons are expected at each meeting.

Essential data for the conference will be developed in Washington on December 9 and 10 at a public-officials conference, also sponsored by the President's Committee.

Prior to the Washington sessions, State, county and municipal officials will analyze their accident-prevention efforts in relation to the "Action Program" recommendations for traffic control, developed by a series of President's Conferences and endorsed by all major safety organizations.

With this advance study as a basis, the officials will determine immediate and long-range needs for accident prevention; recommend those steps which they believe should have priority; and indicate those for which they particularly need public support.

The regional conferences of civic leaders are designed to direct attention primarily to the top priority measures. A similar series of conferences was held in the same cities in the spring of 1956.

New Appointments

Jaffe Moves From Evansville To Santa Clara

Robert L. Jaffe (Assoc. Mem., ITE) has moved to Santa Clara, California, to become City Traffic Engineer.

Jaffe spent the past 15 months in Evansville, Indiana, where he went after finishing the Yale Bureau course in the spring of 1956.

Robert L. Jaffe

A mechanical engineering graduate of Yale University, Jaffe served in the Navy's Civil Engineer Corps with the Pacific Seabees.

Returning home to Pittsburgh after the war, he worked for a time in the steel industry before going to work in the newly formed Traffic Engineering Department in Providence, R. I.

After nearly six years as Operations Engineer, he resigned to attend the Yale Bureau of Highway Traffic in the 1955-56 class.

Chester Goes to Denver From Lubbock

Robert C. Chester (Jun. Mem., ITE) has been named Associate Traffic Engineer in Denver. He leaves Lubbock, Texas, after three years as traffic engineer there.

Chester attended Omaha University and Iowa State, where he received his B.S. in C.E. in 1950. Later he spent a year at the University of Denver in public administration.

A member of the Institute since May 1956, Chester has been an active member of the Texas Section.

Wooster Joins Pittsburgh Traffic Planning Staff

David Wooster (Jun. Mem., ITE) has been appointed Planning Engineer for the Pittsburgh Bureau of Traffic Planning.

Wooster has been assistant traffic engineer in New Haven for two and a half years, and earlier was traffic analyst for Wilbur Smith and Associates.

David Wooster

A graduate of the University of Buffalo, Wooster is an Associate of the Highway Research Board in addition to his Institute Membership.

Corgill Joins Smith Consulting Firm In Florida

William E. Corgill (Assoc. Mem., ITE) has left New York to join the firm of Wilbur Smith and Associates, temporarily assigned to the Tampa (Fla.) office.

A civil engineering graduate of Bucknell, Corgill has worked since 1953 for the Association of Casualty and Surety Companies in New York. Earlier he worked in Buffalo for the New York Department of Public Works. From September 1952 to May 1953 he attended the Yale Bureau, receiving a certificate upon completion of the course.

Angell Becomes City Traffic Engineer In Santa Monica

James E. Angell (Jun. Mem., ITE), has been appointed city traffic engineer in Santa Monica, California.

Angell goes to California from Wichita, Kansas, where he has spent a year and a half as traffic engineer. Prior to that, he served as senior assistant traffic engineer for the City of Indianapolis, Indiana. His career in traffic began during his junior and senior years at Purdue University where he worked part-time for the Joint Highway Research Project under the direction of the Indiana State Highway Commission.

James E. Angell

After graduation from Purdue (BSCE, June 1952), he served briefly as assistant engineer for the New York Central Railroad.

A native of Ohio, he served in the Army Air Force during World War II. After his discharge in 1945, he attended Northrup Aeronautical Institute in California, and entered Purdue in 1948.

Promotions

Robert Conradt—to Traffic Engineer, New Mexico State Highway Dept.

Wolfgang S. Homburger—to Assistant Research Engineer, ITTE, University of California.

Robert A. Keith—to Traffic Engineer, National Capitol Planning Commission, Washington, D.C.

Edward J. McCarthy—to Chief Engineer, Massachusetts Department of Public Works (occurred some time ago, not previously noted here).

Walter E. Schwanhausser, Jr. — to Manager, Application Engineering, G-E Outdoor Lighting Dept.

New Publications

Roadside Development—1957.
Highway Research Board, 2101 Constitution Ave., Washington 25, D. C., 1957. 88 pp. $2.00.

This is the report of the Committee on Roadside Development as presented at the 1957 meeting of the Board.

Of particular interest to traffic engineers are discussions of roadside problems on the Interstate System, including one on legal aspects and another on planning and design aspects. Also of interest is a presentation on safety, health and welfare through roadside development on the new Connecticut Turnpike, and a paper on planting to reduce glare and guide traffic.

Reducing Accidents by Traffic Engineering.
Virginia Department of Highways, Division of Traffic and Planning, Richmond, Va. 1957. 31 pp.

Prepared by the Virginia Highway Department to show what has been done to correct high-accident locations, the booklet reports eleven case histories of such locations. In each case, the report shows what the problem was, how it was treated, and what the effectiveness of the treatment has been.

Well illustrated with photographs and with before-and-after collision diagrams, the booklet is an effective means of telling about safety work of the Department. It will be of interest to others considering similar public relations projects.

Highway Statistics, Summary to 1955.
Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. 1957. 150 pp. $1.00.

A new publication, "Highway Statistics, Summary to 1955," a summary of factual information dealing with highways, their use, and financing, is now available. The 150-page bulletin provides a comprehensive statistical review of highway development in the United States through 1955, and includes all of the data presented previously in "Highway Statistics, Summary to 1945," as well as most of the material published since then in the "Highway Statistics" annual bulletins.

Air Travel Forecasting.
Eno Foundation for Highway Traffic Control, Saugatuck, Connecticut. 1957. 164 pp.

This volume is a forecast of the U.S. domestic air passenger market from 1965 to 1975, prepared by the Port of New York Authority. The method and underlying concepts are applicable to other fields of transportation and the report is therefore of interest to those responsible for forecasting motor vehicle traffic.

The Trees on Your Street.
By Desmond Muirhead. Published by Portland General Electric Co., 621 W. Alder St., Portland, Ore. 1957. 36 pp. $2.00.

This beautifully illustrated booklet was prepared by a landscape architect of Vancouver (B.C.) to help one choose, grow and protect street trees. Sections are devoted to planting methods (arrangement on the street), tree varieties, tree faults (clogged sewers, view obstructions, obstructed street lighting, etc.).

For Traffic Surveys...
THE TRAFICOUNTER, JR.
is a simple, sturdy, time-tested device for traffic counting. It is pneumatically actuated by means of the road tube attachment.
Traffic volume is easily read on direct reading counter. Can be rapidly installed anywhere. Rugged construction; will last for years.
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140 FOOT ALL ALUMINUM SIGN SPAN NEEDS NO CENTER SUPPORT

Amazing. Here you see a sign span never before thought possible—over 10 lanes wide—with no center support—with all the strength you demand—and an ease of installation that is as amazing as its size.

It's one of the many P & K sign supports on the Walt Whitman Bridge, under the direction of the Delaware River Port Authority. Strength? Enough to stand up to winds well over 100 mph based on 700 square feet of sign area. Speed of erection? Assembled on the side of the road, the final assembly and erection delayed traffic for only 14 minutes—a record for speed and ease. Maintenance? None—P & K's smooth, clean aluminum never needs painting or surface care. Handsome? And then some.

Although unusual for its size, this span is typical of the P & K engineering achievements in this field. For more facts on P & K's wide range of traffic signal and sign supports, write for catalog TE-1.

AND IT'S TASSCO FOR SIGNS

You can enjoy the advantages of dealing with an integrated organization too, because our associate, Traffic and Street Sign Company, manufactured the entire aluminum signing program for the Walt Whitman Bridge, and its nine miles of approaches. And, of course, they make an extensive line of traffic control signs for every application. For their catalog write for TSM.

P&K

PFAFF & KENDALL

84 FOUNDRY ST., NEWARK 5, NEW JERSEY

Strictly Business

Air Travelers Will Ride 'Moving Sidewalk' In Dallas

Air travelers tired of trudging through long airport corridors will have the pleasure of riding to and from their planes on a "moving sidewalk" at the new $7 million Dallas Love Field, Dallas, Texas, scheduled to be opened to the public late in September.

Three "moving sidewalk" units totaling 1,435 feet in length will carry passengers in both directions through the three corridors or "fingers" leading out from the main terminal building to the airplane loading gates. The operating speed at first will be 132 feet a minute, about half average walking speed and considerably faster than moving stairs. Passengers may walk while they ride and thereby increase their rate of travel. When the public becomes accustomed to "moving sidewalks," consideration will be given to increasing their speed.

The Dallas "moving sidewalk" is the first ever installed at an airport. Called the "Glide-Ride," it has several unique features. One of these features is that it will go around corners and may be installed in the form of a loop so that passengers are carried in two directions. The curving feature is not utilized at Dallas but will be used in other locations where the course is irregular rather than in a straight line as at Dallas.

Passengers will stand on a rubber carpet fastened to individual 24-in. by 42-in. pallets linked together by universal couplings. The pallets are mounted on 4½-in. diameter rubber-tired wheels which run on a steel track. Three 30 h.p. electric motors, located in the basement under the terminal building, transmit power through lugs on a sprocket chain which engage the underside of each pallet. The rubber carpet does not pull any part of the load but is used only as a cover over the pallets to give passengers a smooth, even platform to ride on. It is made of solid rubber and contains no reinforcing fabric like that used in conventional conveyor belts.

The shortest of the three "Glide-Ride" units measures 218 ft. in each direction and is installed in the north corridor. The units in the east and west corridors are 250 ft. long each way. All carpets are 42-in. wide, permitting pedestrians to ride two abreast. The corridors are completely enclosed and air-conditioned. The "moving sidewalks" rise on a gentle grade from each end so that their center sections are about 8 ft. higher than their ends. This provides an underpass to permit trucks and other service vehicles to drive under the corridors.

New 8,000 Hour Traffic Signal Lamp Developed by Duro-Test

An improved line of traffic signal lamps with a new life rating of 8,000 burning hours for the 67-watt size is announced by Duro-Test Corporation of North Bergen, N. J. These new Super "V" Beam lamps feature the company's exclusive projection type filament which creates optimum signal beam pattern, and exceed established Institute of Traffic Engineers specifications. Included in the line are 25, 40, 60, 100 and 150 watt sizes with a burning life to 5000 hours.

Commenting on the 67 watt lamp, Herbert Anderson, Duro's Commercial Engineer, pointed out that because of the on-and-off nature of its use, the 8,000 hour rating was actually the equivalent of a two to three year in-signal life, and even longer in signals which do not operate on a 24-hours-a-day basis.

Duro-Test's projection-type filament specifically designed for these lamps enables traffic signals to aim the highest concentration of light slightly below horizontal, directly towards the eyes of approaching motorists. Independent tests conducted by Electrical Testing Laboratories on the 60 watt Super "V" Beam lamp establish the fact that this new line exceeds ITE requirements in every significant respect. Where, for example, ITE calls for a minimum of 1650 beam candlepower at 2½° below horizontal, Super "V" Beam delivers 2116—28 per cent more "traffic" light.

The 150 watt Super "V" Beam which fits both 12 inch and regular 8 inch signals is a new addition to the line to meet the demand for more light in the red sections of traffic signals on main arteries and on street corners where visibility is affected by sun phantom.

Sign Booklet Available For Highway Officials

The Douglas Fir Plywood Association has prepared a portfolio of information on the use of fir plywood for traffic control signs. Called "Facts about Fir Plywood and Overlaid Plywood for Highway Signs," is is a complete reference file on the subject for highway officials and traffic engineers.

Both regular Exterior fir plywood and overlaid fir plywood (which has a resin-impregnated fiber face) are covered in the portfolio. Contents include specification, procurement, and design data; case histories; and other background information for the highway sign specifier.

Four DFPA Highway Sign Reports are included. "Specifications and Procurement" gives information on types and sizes of plywood available, weight data, suggestions on how to specify when ordering, and sources of supply. Two reports on design data—one on sign fabrication and one on field erection—contain information on machining, care and storage, and finishing procedures for plywood, as well as recommendations for installation of signs.

A fourth report, "Vandalism and Abuse Tests," has results of DFPA engineering tests on highway signs of various base materials. Photographs of testing procedures and results illustrate the report.

The portfolio contains, in addition, case histories on the use of fir plywood and overlaid plywood for highway signs.

"Commercial Standard CS45-55 for Douglas Fir Plywood" gives standardized grading rules for fir plywood which have been nationally accepted as

grade and quality standards and codified by the Department of Commerce.

Copies of the portfolio are available without charge from Douglas Fir Plywood Association, Tacoma 2, Wash.

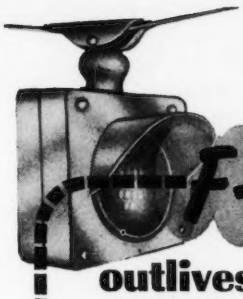
Portable Traffic Signal Solves Traffic Problem

Moving heavy construction equipment across State Highway 101, the main beach route between Los Angeles and San Diego, created a major problem for the contractor during a recent highway job. Due to extremely heavy highway traffic, he was forced to use three flagmen to get his big earthmovers across the highway. The three flagmen succeeded in tying up traffic and slowing down construction progress.

The superintendent for the construction company, recognizing the problem, called in Portable Traffic Signals of Los Angeles. Working in conjunction with traffic engineers of the Division of Highways, specifications were established for two 3-light, 2-phase, 4-directional portable signals, wired in series, with combination manual and automatic control.

The two portable signals immediately unsnarled the traffic jam caused by the contractor's heavy equipment, and the heavy flow of vacation traffic on this important highway continued. Green was maintained on the highway route, changing to amber and then to red only when the heavy equipment was ready to make the "pass" or to cross for loading or dumping. Two of the three flagmen were released, the flow of construction equipment was expedited and regular highway traffic moved at a nearly normal pace.

The two portable signals, battery operated, were used during construction hours for a month at this location and then moved to another similar critical point.

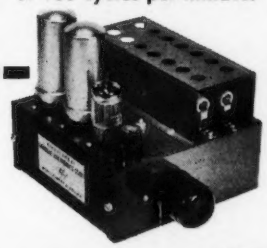


the NEW

F-2C FLASHER

outlives 'em all and costs less

Designed for high speed flashing of traffic signal lamps, the F-2C is an electronically controlled relay designed to pulsate the red light to provide greater target value and prohibit sun phanthom. Its flashing rate may be varied from 0 to 200 cycles per minute. As adjusted at the factory the contact dwell time is 50% with a flashing rate of 180 cycles per minute.



SOME OF THE MANY F-2C FEATURES

- Develops no radio noise.
- Will operate over 620,000,000 times before contact failure.
- Signal remains lit even if equipment failure should be encountered.
- Correctly installed should not require replacement for at least two to three years.

Write or telephone today for further information

GENERAL ELECTRONICS CORPORATION
17 Madison Avenue Montgomery, Alabama
Telephone: CHerry 7-7278

Central Control Of Signal Systems Provided by 'CAT'

A new automatic control system for diverting, stopping or changing the direction of traffic on multi-lane roads has been designed and engineered by Taller & Cooper, Inc., pioneers in control systems. The system is named Confirmed Automatic Traffic-Control, or "CAT."

Installed at a central command post, CAT enables a single operator to instantaneously regulate all traffic signals over many miles of highway. Linkage between the signals and the control point is a single telephone wire, for CAT requires only transmission of coded information, not power. Costly, complicated cable and conduit installations are completely unnecessary.

The CAT control panel includes a simplified illuminated layout of the traffic signal network, engineered and installed by Taller & Cooper for ease and speed of reading. One glance at the control panel clearly shows the entire traffic signal pattern at any given moment.

Any malfunctioning or inoperative signal is instantly flagged on the CAT control panel for immediate assignment of a repair crew. A defective signal does not halt or hinder the operation of other lights.

A key feature in CAT's operation is its ability to confirm the execution of every order, no matter how complex the signal sequence. The basis of CAT's self-checking ability is a communications technique, multiplexing, in which

(Continued on page 47)

Institute Affairs

Pan American Highway Congress

The Institute was well represented at the 7th Pan American Highway Congress held in August in Panama, Republic of Panama. Preceding the actual Congress was a meeting of traffic experts, at which the Institute was officially represented by D. Grant Mickle.

Institute members present at the Congress, in addition to Mickle included: C. D. Curtiss, Edward G. Wetzel, Wm. G. Eliot 3d, B. W. Marsh, J. O. Mattson, Dr. Tomas E. Reyna (delegate from Venezuela), Ing. Rafael Cal y Mayor (delegate from Mexico), Melvin Bierman and Charles Upham Jr.

Among the guests at a reception given by Mildred and Melvin Bierman for Pan-American Congress delegates were (l-r) Col. Hugh M. Arnold, Lt.-Governor of the Canal Zone, Commissioner Curtiss, Major General W. E. Potter, Governor of the Canal Zone and Melvin Bierman.

Among those present at the Bierman reception in Panama were (l-r) Melvin Bierman, Mrs. E. Needles, W. G. Eliot 3d, B. W. Marsh, Mrs. Marsh, Wm. Bugge, Mrs. Bierman, Karl M. Richards, E. G. Wetzel, Mason G. Lockwood, Mrs. Edwin James, Col. E. Needles, Mr. Edwin James "Grand-Daddy of the Pan American Highway," Robert Brooks and Mrs. Brooks.

Although the meeting of experts and the Congress itself had many items of serious business to transact, including discussions of uniformity of road rules and signs throughout the Western Hemisphere, the delegates found time for a number of pleasant social activities.

Rumor has it that Charles Upham, Jr. who was present as an observer, became an official delegate for the Government of Colombia. Confirmation on this is being sought.

Motor Vehicle Inspection Manual Completed

A notice was inserted in Traffic Engineering magazine several months ago calling attention to the publication of a revised version of the Motor Vehicle Inspection Requirements developed and published by the American Standards Association.

Under the procedures of the American Standards Association, the work on this revision was carried on by the committee under the chairmanship of Commissioner Fred Clarke of the New Hampshire Motor Vehicle Department. The Institute was represented on the committee by Ralph Gross with Gordon Lindquist serving as an alternate. Several meetings of the committee were held and a final edited draft was circulated with a letter ballot in February 1956. The final product was approved as an American Standard on December 18, 1956. The document was printed in May and is now available from the American Standards Association in New York.

Inasmuch as the Institute was involved in the preparation of the Standard, it is important that this document be recognized by Institute members. Use of the Standard should be encouraged wherever appropriate.

Eight Members Complete Computer Course

A two-week course, "Applications of Computers to Highway and Traffic Engineering," ended August 31 at Northwestern University. The course, which was presented jointly by the Transportation Center at Northwestern and the Institute of Transportation and Traffic Engineering of the University of California, had 17 students enrolled, of which number eight were Institute members and a ninth an applicant for Institute membership.

The Institute members enrolled were: Willard H. Armstrong, Ohio Highway

(Continued on page 49)

Positions Available

HAMILTON, ONTARIO

Position: Traffic Engineer.

Requirements: Graduate engineer from a recognized university, with a thorough knowledge of traffic engineering practices and a minimum of 2 to 5 years of practical experience. Should be a member of the Association of Professional Engineers of Ontario and preferably a member of the Institute of Traffic Engineers.

Salary: Starting salary commensurate with previous experience. Position offers continuity of employment, excellent fringe benefits, and opportunity for advancement in rapidly expanding community.

VIRGINIA COUNCIL OF HIGHWAY INVESTIGATION & RESEARCH

Position: Highway Research Engineer to head a section of the Research Division of the Virginia Department of Highways specializing in traffic engineering and related problems in safety. This position involves responsibility for planning, supervising, and conducting research, and preparing and presenting oral and written reports of results.

Requirements: A master's degree in engineering (course work may not be substituted for thesis) and four years of engineering experience, at least two years of which must have been in research work demonstrating ability to conduct research in the traffic engineering field. Preference will be given to applicants having experience in teaching.

Salary Range: $7,032 to $8,784.

Position: Highway Research Engineer to assist in traffic engineering research and in related safety research.

Requirements: A master's degree in engineering (course work may not be substituted for thesis) or a bachelor's degree in engineering (with record acceptable for undertaking graduate study), and two years of research experience. Opportunity for this man to undertake part time graduate study at the University of Virginia leading to a Master of Civil Engineering degree.

Salary Range: $5,880 to $7,344.

Position: Highway Research Engineer to assist in traffic engineering research and in related safety research.

Requirements: A bachelor's degree in engineering with record acceptable to undertake graduate study. This man will have an opportunity to enroll in a part time program leading to the Master's degree.

Salary Range: $5.400 to $5,880.

Contact: Tilton E. Shelburne, Director of Research, Virginia Council of Highway Investigation and Research, Thornton Hall, University of Virginia, Charlottesville, Virginia.

WINSTON-SALEM, NORTH CAROLINA

Position: Traffic Engineer.

Requirements: College graduate with graduate work in traffic engineering or equivalent in experience.

Salary: Open.

Apply: W. H. Reich, Personnel Director, City Hall, Winston-Salem, N. C.

U. S. CIVIL SERVICE COMMISSION

The U. S. Civil Service Commission has revised and reissued the announcement of the currently open examination for engineer. The engineering positions to be filled are in various fields of work and pay from $4,480 to $11,610 a year. They are located in various Federal agencies in Washington, D. C., throughout the United States, and in foreign countries.

To qualify for these positions, applicants must show appropriate education or experience in engineering. A written test for certain positions is required of applicants who do not meet the requirements for a degree in engineering. Applications will be accepted from students who expect to complete the required study within nine months.

For further information, including instructions on where to send applications, consult civil service examination announcement No. 112 B. Information on examinations and application forms may be obtained from most post offices or from the U. S. Civil Service Commission, Washington 25, D. C.

MEMBERSHIP APPLICATIONS

The following applications have been received since the list published in the September issue.

APPLICATIONS FOR TRANSFER

BIERMAN, Melvin
Traffic Engineer, Panama Canal Company, Balboa Heights, Canal Zone. August 12, 1957 for MEMBER grade.

BULLOCK, Jesse C., Jr.
Associate Traffic & Planning Engineer, Virginia Department of Highways, 1221 East Broad Street, Richmond, Virginia. August 7, 1957 for MEMBER grade.

BYROM, Gustav A., Jr.
Traffic Planning Supervisor, Miami Division of Traffic Engineering, P. O. Box 708, Coconut Grove Station, Miami, Florida. August 7, 1957 for ASSOCIATE grade.

CHRONISTER, Joseph S.
City-Parish Traffic Engineer, P. O. Box 1471, Baton Rouge, Louisiana. August 19, 1957 for ASSOCIATE grade.

COLEMAN, Robert R.
Traffic Engineer, Pennsylvania Department of Highways, 21st & Herr Streets, Harrisburg, Pennsylvania. August 30, 1957 for MEMBER grade.

FISCHER, Stewart C.
Traffic Engineer, City Hall, San Antonio, Texas. August 12, 1957 for MEMBER grade.

FLYE, William D.
Traffic Engineer, City Hall, Riverside, California. August 26, 1957 for ASSOCIATE grade.

GEORGE, Stephen, Jr.
Assistant Transportation Engineer, 256 Civic Center, San Diego 1, California. August 7, 1957 for ASSOCIATE grade.

HALL, Edward M.
Transportation Research Director, Room 256, Civic Center, San Diego 1, California. August 28, 1957 for MEMBER grade.

MAGIN, David R., Jr.
Engineer II (Traffic), Bureau of Traffic Engineering, 526 S. W. Mill Street, Portland 1, Oregon. August 12, 1957 for ASSOCIATE grade.

SOSMAN, Edward C.
Traffic Engineer, Ramp Buildings Corporation, 230 Park Avenue, New York, New York. August 30, 1957 for ASSOCIATE grade.

THOMPSON, Lawrence E.
Assistant Traffic Civil Engineer, Arizona Highway Department, Phoenix, Arizona. August 22, 1957 for ASSOCIATE grade.

NEW APPLICATIONS

BATES, Thomas I., Jr.
District Traffic & Planning Engineer, Florida State Road Department, P. O. Box 591, Bartow, Florida. August 14, 1957 for MEMBER grade.

BERRY, Walter R.
District Traffic Engineer, Illinois Division of Highways, 126 East Ash Street, Springfield, Illinois. August 26, 1957 for MEMBER grade.

COOK, Edward L.
Traffic Co-ordinator (Assistant), 5th Floor, City Hall, Youngstown, Ohio. August 21, 1957 for ASSOCIATE grade.

CUNNINGHAM, Stuart A.
Traffic Engineer, Review Division, Delaware State Highway Department, Dover, Delaware. August 21, 1957 for JUNIOR grade.

FURNESS, Kenneth P.
Assistant Route Analysis Engineer, Ontario Department of Highways, Parliament Buildings, Toronto, Ontario, Canada. August 14, 1957 for ASSOCIATE grade.

GARZA, Paul, Jr.
Planning & Traffic Engineer, City Planning Commission, City Hall, Laredo, Texas. August 26, 1957 for JUNIOR grade.

GUPTA, Har Krishan Lal
Assistant Highway Engineer, Washington State Department of Highways, Transportation Building, Olympia, Washington. August 20, 1957 for JUNIOR grade.

GUYTON, Joseph W.
Research Assistant, University of Illinois, 301 Civil Engineering Hall, Urbana, Illinois. August 26, 1957 for JUNIOR grade.

HOFENER, Harold R.
Assistant Traffic Engineer, City Hall, Tulsa, Oklahoma. September 3, 1957 for JUNIOR grade.

HYMANS, Edgar M.
Director of Research, Cincinnati Transit Company, 309 Vine Street, Cincinnati 2, Ohio. August 13, 1957 for MEMBER grade.

KEIFER, Kenneth G.
Partner—Highway Design Engineer, Fenton G. Keyes Associates, 202 Washington Street, Providence, Rhode Island. August 21, 1957 for MEMBER grade.

MORAWSKI, Teddy J.
Programming & Planning Engineer, U. S. Bureau of Public Roads, Room 701, Pennsylvania Building, Washington, D. C. August 12, 1957 for ASSOCIATE grade.

PARRISH, Harry L., Jr.
Traffic Engineer, Simpson & Curtin, 1405 Locust Street, Philadelpiha 2, Pennsylvania. August 9, 1957 for ASSOCIATE grade

PLATT, Mathew
Traffic Engineer, Michael Baker, Jr., Inc., Baker Building, Rochester, Pennsylvania. September 3, 1957 for MEMBER grade.

RHUDY, Harold C.
Associate Traffic Engineer, N. C. State Highway Commission, Traffic Engineering Department, Raleigh, North Carolina. September 3, 1957 for MEMBER grade.

SAWYER, Frederick J.
Associate, Head of Report Department, Parsons, Brinckerhoff, Hall & MacDonald, 51 Broadway, New York 6, New York. August 30, 1957 for MEMBER grade.

SCHLEIDER, Robert H., Jr.
Assistant Professor, Civil Engineering, Texas A&M College, College Station, Texas. August 21, 1957 for JUNIOR grade.

SHAHAN, Harold L.
Assistant District Traffic Engineer, Washington State Department of Highways, District 3, P. O. Box 327, Olympia, Washington. August 13, 1957 for ASSOCIATE grade.

WARD, William A.
Associate Traffic Engineer, N. C. State Highway Commission, Raleigh, North Carolina. August 26, 1957 for ASSOCIATE grade.

Section News

METROPOLITAN NEW YORK SECTION

MEET YOUR SECTION OFFICERS

H. Jack Leonard, President

Jack was recently promoted to the position of Associate in the firm of Edwards, Kelcey, and Beck, where he has been employed since 1947. Since joining the firm, his work has been devoted to highway and traffic assignments. One of his recent major assignments has been as Project Engineer on a 15 million dollar section of the Garden State Parkway. Jack received both his B.S. and M.S. degrees in Civil Engineering from M.I.T. His military career was in the Navy as an Ensign in the Civil Engineer Corps stationed in Puerto Rico. He hails from Elizabeth, New Jersey, and now lives with Mrs. Leonard in Shrewsbury.

Mr. Arnold G. Fisch, Vice President

Arnold Fisch, since 1951, has held the job of Traffic and Safety Engineer for the New York State Thruway Authority. A native of Albany, Arnold attended R.P.I. where, in 1939 and 1942, respectively, he received his B.C.E. and M.C.E. From 1939 until 1944, when he entered the military service with the Navy Civil Engineer Corps, he was an instructor in Civil Engineering at R.P.I. From 1946 until his present position, he was with the New York State Department of Public Works in their Highway Planning Bureau. Arnold is married and lives with his wife and two children in Albany.

Gordon K. Gravelle, Secretary-Treasurer

Gordon Gravelle holds the job of Deputy Commissioner of Traffic for the City of New York. A native of Wolverine, Michigan, he is a graduate of the University of Michigan and the Yale Bureau of Highway Traffic. During World War II, he served in the Engineer and Transportation Corps and now holds a reserve commission of Lieutenant-Colonel. Prior to his New York City assignment, he was employed as Transportation Engineer with the Automotive Safety Foundation in Washington. Gordon is a director of ITE and an extremely active member of the Highway Research Board. He is married and resides in Bayside, Long Island with his wife and two children.

PERSONAL

Teke Wiley, celebrated the completion of his fifth year as Traffic Commissioner of New York City. Teke was presented with a certificate of appreciation for his contribution toward increased safety and traffic congestion relief by 16 leading New York City civic associations.

Roy Cottam, Director of Traffic Signals Division, New York City Department of Traffic, returned from the Yale Bureau of Highway Traffic in June to resume his duties in the Department.

We want to welcome *Jacob C. Young,* Chief Highway Engineer for Porter, Urquhart, McCreary & O'Brien of Newark ,to the Metropolitan Section.

The following Section members have returned from the Yale Bureau of Highway Traffic; *Roy Cottam,* Director of Traffic Signals Division, New York City Department of Traffic; *Ed Cantilli,* Traffic Engineer I, and *Tony Galioto* and *Gene Lessieu,* both Highway Project Planners, all at the Port Authority. Tony was President of the ITE Student Chapter at Yale. *Bruce Gramling,* Assistant Civil Engineer with the New York City Department of Traffic, and *Lee Goodman,* Traffic Engineer I at the Port Authority, will attend the Bureau this year. Best of luck to Lee and Bruce at Yale and to the others who have returned to their jobs with the advantage of the Bureau's training behind them.

INTER-AMERICAN MEETING OF TRAFFIC EXPERTS

Ed Wetzel, was one of eleven U.S. delegates to the Inter-American Meeting of Traffic Experts and the Seventh Pan American Highway Congress in Panama City from July 28 to August 10. *Bertram D. Tallamy,* Federal Highway Administrator, was Chairman of the U.S. Delegation. The meeting of Traffic Experts discussed the problem of free international auto travel throughout Central and South America, and the problem of uniform traffic signs and signals throughout the Inter-American countries.

In addition to Ed, four other ITE members were U.S. delegates: *William G. Eliot III, Burton W. Marsh, D. Grant Mickle* and *J. O. Mattson. Grant Mickle* was the official representative of the Institute.

TEXAS SECTION

Stew Fisher writes, "It seems that we have been trying to exist during the summer because of vacations, military camp and other normal summertime activities. In spite of it all, we added about five miles of one-way streets to our system recently and plan another five miles by August 1. The day after we changed over to one-way operation, I left town (on my own initiative) so that Al Groves would have to face the music. I consider this a gem of planning on my part.

"The purpose of these one-way changes is to fit in with the completion of our signal system early in August. As you know, this had been scheduled earlier, but I think the August date is for sure. (*Jack Hulett* gives us the date of August 13, for ribbon cutting, etc.).

"Last June we unveiled a one-inch to fifty-foot scale model of our downtown area which was built by students of Texas Tech for the purpose of studying downtown redevelopment. This model is a thing of beauty, and we have had a lot of fun removing whole blocks of buildings to see what might be done with the area."

Paul Garza of Laredo says, "We are working on an alternate plan for an expressway location through Laredo. The Texas Highway Department is at present studying my plan. This expressway section through Laredo is part of the Interstate System (U.S. 81).

Other projects include completion of a comprehensive parking survey and submittal of parking plan which features fringe area parking lots and rigid parking meter time limits. Also, under consideration is a plan for a Central Mass Transportation Terminal in the downtown area, plus a one-way street system. You could very well say that I have my hands full at present.

"Of course, I didn't mention our planning activities. We are developing a building code, housing code, subdivision regulations, and a major street plan, to name a few."

Doug Byrne of Houston is starting a new venture. He writes: "Effective August 15, 1957, I will be in business for myself under the title of Signal Engineering Company, which will offer Engineering, Sales and Service of Traffic Equipment. I will have several associated lines of traffic equipment, mainly Crouse-Hinds Controls and Signals. My new address will be: 804 West Gray, Houston, Texas."

"Greg" Gregory in Waco is happy with his signal system but having to contend with bad pavement surfaces due to the recent floods.

Bob Chester announces that he has recently accepted a position as Associate Traffic Engineer with the City of Denver, Colorado and will start work there sometime this month. Bob mentions also, how much he has enjoyed the Texas Section and that he will miss everybody connected with it. (Best wishes, Bob, and we will miss you, too).

Paul Rice reports from Corpus Christi, "We are currently in the process of installing a few traffic signals scattered around over the city. We are placing emphasis on traffic actuated equipment.

"Our (State Highway Department) new high level bridge approaches are well underway and, when completed, we will have a landmark in Corpus Christi similar to the high level bridge in the vicinity of Orange, Texas which will be well worth your time to take a look at when you come our way. It should be completed in late '58."

Jim Saylor advises that "Through the courtesy of the Automatic Signal Company arrangements are being made to install their electronic traffic monitor on Dallas' Central Expressway. The recording units will be placed in the office of the Department of Traffic Control and will receive their information from the site by leased telephone wires.

"The monitor will provide a continuous graphic record of the instantaneous traffic density and average speed.

"A committee representing the State Highway Department, the Texas Transportation Institute, Texas A&M College, and the larger cities of Texas is studying the operational characteristics of expressways as related to design. Data obtained by the monitor will be of invaluable aid to the committee in their studies."

WESTERN SECTION

Bay Area

Ross Shoaf arranged a dinner meeting at the Montclair Restaurant on April 18. Thirty Bay Area ITE's listened to an illustrated talk by John Kirkpatrick of Skidmore, Owings, and Merrill on the Gateway Redevelopment Area in San Francisco's Embarcadero District. A picnic at the Marin Town and Country Club was planned for the May meeting by Roy Oakes. Rain (in California?) foiled the plans and forced a rescheduling of the fun fest in June. Bob Crommelin is working out another dinner meeting for July. Possible topic is a review of this session of

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use CATAPHOTE TRAFFIC CONTROL PRODUCTS

For nearly 30 years Cataphote Corporation has pioneered in the development of better methods and materials for traffic control. Specialized experience and never-ending research have combined to raise Cataphote to a position of leadership in this field. Today, Cataphote offers a full line of non-electric traffic control products, designed and manufactured to provide the ultimate in safety for both motorist and pedestrian. These products include:

STREET NAME SIGNS—Steel or aluminum with three coats of baked, high gloss, long life enamel. Available reflectorized with Cataflex "202" for night visibility, or plain.

TRAFFIC SIGNS—Available in both steel and aluminum, Cataphote traffic signs meet state and federal specifications. All standard sizes and wordings. Reflectorized or plain.

CATAFLEX REFLECTIVE COATING—Do-it-yourself with Cataflex "202". Produce brilliantly reflectorized, weather-proofed signs at 1/10 the cost of other methods. Requires no special tools—no special training.

REFLECTIVE BEADS—Add nighttime visibility to pavement markings for increased safety and durability. Will outlast plain stripes by 50%. Available for drop-on application or premix—plain or waterproof.

CATALINE REFLECTIVE STRIPING—A specially compounded, quick drying binder firmly holds millions of microscopic glass beads. Lasts half again as long as ordinary traffic paints. Available as premix or with waterproof drop-on beads.

CATATHERM REFLECTIVE PLASTIC STRIPING—Lasts 9 times as long as painted markings. Specially formulated plastic, pigment and over 55% reflective traffic beads. Catatherm is hot extruded . . . drop-on beads applied simultaneously provide immediate reflectance.

Cataphote
CORPORATION

TOLEDO 10, OHIO JACKSON, MISSISSIPPI

the legislature's activities in traffic engineering.

The I.T.T.E. issued 6 Master of Engineering Degrees in June with 2 more to be presented in September. The June graduates and their destinations are as follows: partment of Highways, Ontario; Walt Gillfillan—CAA in Oakland; Bob Moe—Wisconsin Highway Department; Jim Skilton—BPR in Boise; Walt *Temofeychuk* now *Scott*—will work this summer for Marty Wallen in Richmond and then head for Washington hoping to work for the highway department while his wife goes to college; Reed Winslow—ASF in Washington, D. C.

The two men who will receive their degrees in September are Barney Johnson, who goes to work July 1 for Ross Shoaf in San Francisco, and Kris Gupta who is going to work temporarily with Casey Glantz in the Washington Highway Department. Kris is planning on returning to India later this year.

A meeting was held in Richmond in June of local operating engineers to discuss the utilization of a new style parking sign. Those in attendance were Czizek, Kennedy, Kermit, Oakes, Shoaf, and Wallen. The new signs have a target color in the upper left hand corner of the sign and have been used in Los Angeles and elsewhere. The meeting passed a resolution for the adoption of these signs to be sent to the state sign committee. A representative of the Richmond Police Department was present to discuss the enforcement aspects and Jay Czizek will confer with the Oakland Judges Committee for their viewpoints. The meeting was so successful that it was proposed that the group meet occasionally to discuss current problems on new procedures. Marty Wallen was named temporary chairman of the group.

Intermountain Area

Ellis Mathes, our new WITE president, finally returned home to Idaho from the Denver meeting and a vacation in Kansas. Those of us in the office were beginning to wonder if it was the rains in Kansas or the new presidential duties which were delaying Ellis's return. Idaho now has another ITE member making the total four. The newest addition is Marvin Lotspeich who was formally Traffic Engineer for Spokane, Washington. Marvin arrived in June and is Assistant Traffic Engineer for the Idaho Department of Highways. Lewis J. Ross, Design Engineer for the Idaho Department of Highways, attended the WASHO Convention at Houston, Texas, June 11th to 14th.

Gene Burbidge of the Planning Survey reports they have just completed the study to determine the estimated cost for completion of the Interstate System in Idaho. They are now busily engaged in a Highway Needs Study. The Traffic Division has developed a new street lighting policy which will be presented to the State Highway Board for approval. This is a new approach to the problem and we are not certain how it will work. We hope it proves satisfactory as there is nothing definite of street lighting warrants at this time.

Oregon Area

The main topic of information from up Salem way has been the recent illness of Al Head. However, we are pleased to report that Al has apparently recovered fully and is " chomping at the bit" again. Val Johnson and Bud George have been swamped with signal and illumination contracts. It appears that the one-way street program, so successful in Portland, has begun to spread its influence throughout the "webfoot country." There are plans in the making for Forest Grove, Roseburg, Medford and Grants Pass. Jack Henberger and Bob Nelson visited Salem with the announced purpose of promoting A.G.A. cut-out letters. Henberger and Bruce Crandall played a little "pasture pool" but as yet no one knows who bogied the most—apparently they both did as nobody was crowing after the game. Immediate Past President Charlie Prisk was in Salem July 16, 17, making the junket on the safety study accident program that he has under way; Oregon being one of the states that is going to cooperate by supplying information to the B.P.R.

San Diego Area

The 1957-58 season sarted with the election of Hal Durham and John Tsiknas as Area Chairman and Area Scribe, respectively.

At the July luncheon-business meeting, Reno or Lake Tahoe was chosen as the area's first choice of site for the 11th Annual Meeting of the Washington Section.

Ed Hall reports that his Transportation Research Group has completed the City of San Diego 1971 Highway Needs Study. Ed cites this project as an example of wonderful Metropolitan cooperation and coordination. ITEr's Steve George and Keith Gilbert participated in the project. As a point of interest, the City's needs cost (including state highways) by 1971 is estimated at $400,109,000.

NEW! for greater SAFETY

SAF-T-GLO

*U.S. Pat. Number 2,719,505

FLUORESCENT COLOR

SAFE-T-CONE*

ALL-RUBBER

TRAFFIC GUIDES

Light up like flares in sunlight or headlights!

They just can't miss being seen. Brilliant fluorescent color flashes instant warning – day or night – for a new high in safety at danger points.

2182

Tough, strong, built to last . . . yet light in weight, low in cost. SAFE-T-CONES are ideal for every traffic control need.

Genuine SAFE-T-CONES made only by Radiator Specialty Co., Charlotte, N. C.

YEARBOOK CHANGES

ANGELL, James E. (Junior)
Traffic Engineer, City Hall, 1685 Main Street, Santa Monica, California.

CHESTER, Robert C. (Junior)
Associate Traffic Engineer, City & County Building, Denver, Colorado.

COLEMAN, Robert R.
Traffic Engineer, Pennsylvania Department of Highways, Harrisburg, Pennsylvania. SEND MAIL (until 6/58): 7 Mont Street, Woodmont, Connecticut.

CONRADT, Robert (Junior)
Traffic Engineer, New Mexico State Highway Department, P. O. Box 1641, Santa Fe, New Mexico.

COOK, Bernard L. (Junior)
Junior Engineer (Civil), Seattle Engineering Department. SEND MAIL: 5503 Bangor Street, Seattle 88, Washington.

CORGILL, William E. (Associate)
Traffic Engineer, Wilbur Smith & Associates, Tampa, Fla. SEND MAIL: RFD #1, Palm Harbor, Florida.

ESCH, Harry M. (Associate)
Sign & Design Engineer, Oregon State Highway Department. SEND MAIL: 540 Luradel Avenue, Salem, Oregon.

HOMBURGER, Wolfgang S. (Junior)
Assistant Research Engineer, Institute of Transportation & Traffic Engineering. University of California. SEND MAIL: 922 Hilldale Avenue, Berkeley 8, California.

KAPLAN, Joseph M. (Affiliate)
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VEY, Arnold H. (Member)
Principal Traffic Engineer, Simpson & Curtin, Philadelphia 2, Pennsylvania. SEND MAIL: 904-D Parkview Apartments, Collingswood, New Jersey.

Reference Notes

SEPARATING WALKERS & RIGHT-TURNERS

by Martin E. Bruening
(Mem., ITE)

Traffic Engineer and
Superintendent of Electrical Services
Milwaukee, Wisconsin

IT TOOK TWO TRIES, but we finally succeeded in getting 10,000 pedestrians and 250 right-turning motorists through the same intersection in one hour. This is the count at each of Milwaukee's four busiest intersections.

In fact, the 10,000 pedestrians per hour count is just during our average daily rush hour period. It's over 20,000 during pre-holiday store events. Even during non-rush periods more than 5,000 pedestrians walk, run or toddle across each of these four intersections every hour. Adding to the problem, four bus lines criss-cross through these intersections.

Naturally we had hung up our "no left turn" signs years ago. But it was the 250 *right* turns an hour— over 60 per quadrant—that did it. That and the regiments of pedestrians.

Pedestrians stood and pushed on corners, and they squawked. Morotists raced their motors and honked through several signal cycles. Buses loaded with people wanting to get places inched along late, and the transit company wrote us letters. The traffic did everything but move.

Tried "Scramble"

In fairness to the "Amble-Scramble" or "All Walk" system, which we tried for about 6 months, we should say that it stopped the war between pedestrians and turning motorists. But at what a cost! In introducing the third phase, "All-Walk," into the cycle, we increased travel time by one-third. If a taxi required 10 minutes before, to get from here to there, now it took 13 or 14 minutes. Accordingly, traffic built up and caused worse congestion and greater delay at surrounding intersections. And again, came inspired complaints from truckers, motorists, pedestrians, bus riders, and the transit company. A bus schedule was something on paper only. We'd have to try something else.

We made studies, issued reports and finally abandoned the "scramble" system as a brave try.

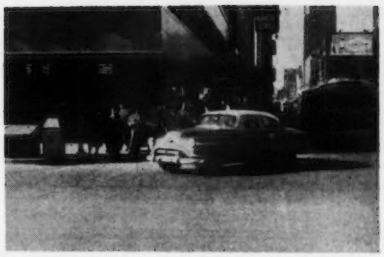
Then we reverted to the two-phase system again, with our "Walk" lights showing concurrently with the beginning of the green interval. And we timed our pedestrian clearance after the "Walk" disappeared to give folks of all ages time to clear the streets without scurrying.

But again, the same problem. Right turns blocked by a wall of pedestrians. Fortunately most Milwaukee motorists were polite and didn't try to crash the wall.

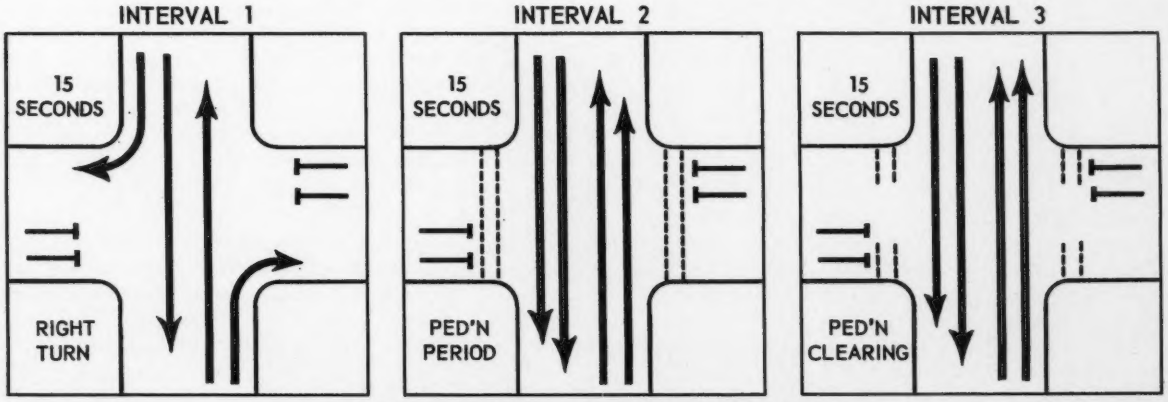
"Share-the-Phase" System Solves Problems

On March 20, 1956, we solved the problem of a snarl on the streets, and on the lips of citizens, with a new signal system. The equipment involved at the four intersections uses "Walk"-"Don't Walk" lights, plus green arrow signals for through traffic and right turns. The new Eagle, 8-inch square incandescent lamp units are used in this case. But, of course, any type of "Walk" and "Don't Walk", as well as arrow equipment, can be applied in the same manner.

Basically, the system itself is as simple as this: Motorists are permitted



Figures 1a and 1b
At the beginning of the Wisconsin Avenue Green interval, motorists receive a green arrow permitting a right turn and straight through movement. Pedestrians are held by the "DON'T WALK" signal on far corner.



TRAFFIC MOVEMENTS FOR WISCONSIN AVENUE

Figures 2a and 2b
During 2nd interval no turns are permitted and pedestrians cross in complete safety.

a right turn during the first 15 seconds of green interval, during which time pedestrians do not walk. And during the remainder of the green interval, pedestrians walk parallel to the traffic streams but motorists can't turn right. (See the diagram.)

Pedestrian walk time is 15 seconds, followed by 15 seconds of flashing "Don't Walk"—or a total pedestrian period of one-half minute. This is greater than right-turn time, simply because the ratio of pedestrians to vehicles is so much greater, as indicated by the figures given.

The photographs, sketches and captions will show a clear picture of how the simple system works. And it really works. For example, pedestrians now have 15% more safe, sure, turning-vehicular - interference - free crossing time than under the "scramble" system. And motorists enjoy 15 seconds of right-turn time without danger of pedestrians stepping off the curb.

Total cycle time is 90 seconds. This period is more than ample to alternate between right turns and pedestrian-walk for both main and cross streets. And it works out well for our short block lengths.

From Complaints to Compliments

It is human nature, of course, never to want to be delayed at all in life's pursuits, even when crossing a street. Observing the system operate through normal and holiday shopping rushes, one sees 99 per cent plus pedestrian observance gladly and most effectively rendered.

Months of operation have proved the new system to be the most orderly and completely systematic arrangement yet devised, with the most equitable provisions for all major traffic and safety requirements—(a) Pedestrian, (b) Motor-Vehicle and (c) Transit.

The Milwaukee Police Department as well is appreciative. The new arrangement, they say, gives them "a definite means of separately handling the huge groups of pedestrians and vehicles."

Figures 3a and 3b
Clearing period to permit pedestrians to reach other side before cross traffic starts.

And the transit company is happy. Officials say, "We're running buses of four lines through on faster schedules than on the conventional two-phase system . . . and *much* faster than with Scramble."

THE TRAFFIC PROBLEM

(Continued from page 12)

offer on-the-job training and make better use of our own engineers. We should be prepared to give compensation sufficient to attract and hold qualified men and to provide them with the support personnel they need, if we are to supply the services the public will demand in the years ahead.

An excellent example of on-the-job training is the school for highway department recruits at the Missouri School of Mines and Metallurgy in Rolla. Is there any reason why cities and counties couldn't take advantage of the same facilities to train new employees for their staffs?

High speed computers for data analysis and aerial photography for field surveying are excellent examples of ways to realize savings in engineering manpower but don't forget there are other areas where a similar savings can be realized at little cost. In the matter of report writing, many engineers spend valuable time laboring over lengthy reports which their background and training have not prepared them to write. Writers, artists, and illustrators could do a far better job and leave the engineer free for other projects. Support personnel could gather data, tabulate and analyze it under the direction of engineers. Don't look too far for answers to the problem of improved use of manpower.

I have attempted to answer two questions: What is creating the traffic problem and which direction is it going. I hope I have been reasonably successful in providing the answers. Let me summarize them this way:

Our traffic problems are the result of the lag in planning, construction, and operation of highways, streets and parking facilities. They are the children of mis-management, underestimation, and misplaced emphasis. They really can't be blamed on too many motor vehicles or people.

Where our traffic problems go and the magnitude they reach is largely up to people such as you. Your ability to legislate, organize, plan, construct and operate a transportation system will determine, in the final analysis, the traffic problems of tomorrow. I wish you every success in your efforts in the years ahead.

SAN ANTONIO LOOKS TO 1970.... with its NEW Traffic Signal System

153 intersections now controlled by ELECTRO-MATIC® PR SYSTEM

Handling today's traffic is difficult enough, but to provide signal controls for expected 1970 traffic volumes is a major accomplishment. San Antonio did just that. They selected a flexible, versatile system that not only puts an end to downtown traffic snarls but insures movement of maximum volumes in the years to come.

An ultramodern all-electronic "PR" System controls 153 intersections in the heart of vital, growing San Antonio. All changes in volume and direction of traffic are constantly recorded and the most effective signal indications automatically computed and put into effect smoothly and without delay.

For details on how the PR System can help your city grid or arterial traffic, write for Bulletin No. E-224.

"PR Local"

TRAFFIC ACTUATED®

AUTOMATIC SIGNAL DIVISION
EASTERN INDUSTRIES, INC.
NORWALK, CONNECTICUT

Reference Notes

SIX MONTHS USE OF 'Yield Right-of-Way' SIGNS

by James C. Ray
(Jun. Mem., ITE)
City Traffic Engineer
Santa Ana, California

On October 8, 1956, the City of Santa Ana erected "Yield Right-of-Way" signs at two intersections within the City. These signs were erected by authority of the California Vehicle Code and under direction of the City Council.

The Vehicle Code requires that a vehicle "shall not drive at a speed exceeding 15 miles per hour across such highway or intersection and shall slow down and stop if necessary and shall yield the right of way to other vehicles which have entered the intersection from an intersecting street or which are approaching so closely on the intersecting street as to constitute an immediate hazard."

The intersections were characterized by a number of right-angle accidents, relatively good visibility and light traffic volume. Both are located in residential areas with moderate parking on the adjacent streets.

The signs are 30-in. triangular signs with black letters on a yellow background. The "Yield" is in 8-in. letters, "Right" and "Way" in 3-in. letters, and "of" in 2-in. letters. The word "Yield" was painted on the pavement 75 feet in advance of the crosswalk line and a dashed line was painted at the location of the normal "Stop" line.

Table I illustrates the traffic conditions, physical conditions and accident experience at the two intersections studied.

In the short period of time of this study accidents were reduced from an average of 1 per month for 6 months before installation to none for 6 months after installation.

There are three additional intersections where "Yield" signs were installed (since the above intersections) which averaged slightly less than 1 accident per month. No accidents have occurred at these 3 locations in the three months of "Yield" sign operation.

A study of approach speeds was made at the 2 original locations, both on the major and minor streets. The speeds were clocked from a point 128 feet in advance of the crosswalk line to 40 feet in advance of this line. Table II lists the average speed and the percentage of vehicles that stopped or slowed to less than 10 miles per hour.

The major significance of this study appears to be that the minor street traffic reduces speed and a greater percentage of this traffic slows to 10 miles per hour or stops. The major street vehicle speed did not change significantly but fewer vehicles slowed to 10 miles per hour or stopped.

It appears that the "Yield" sign is accomplishing the main purpose for which it is designed. The use of the signs has resulted in fewer accidents without unduly restricting the minor flow of traffic. The City of Santa Ana is planning continued use of these signs.

Table I

Intersection #1	Traffic 24 Hr.	Traffic Peak Hr.	Safe Approach Speed (30 m.p.h. on major streets)	Right Angle Accidents Before 6 mos.	Right Angle Accidents Before 12 mos.	Right Angle Accidents Before 2 yrs.	Right Angle Accidents After 6 mos.
Bishop St.	2,013	232					
Birch St.	1,159	120	19 m.p.h	2	3	5	0
Intersection #2							
Spurgeon St.	2,039	253					
Tenth St.	1,279	93	15 m.p.h.	4	7	10	0

Table II

Intersection #1	2 Mos. Before Yield Signs Major Street	2 Mos. Before Yield Signs Minor Street	2 Mos. After Yield Signs Major Street	2 Mos. After Yield Signs Minor Street
Average speed — m.p.h.	19.6	23.4	19.9	20.5
Percentage traffic stopped or slowed to 10 m.p.h.	63%	36%	32%	62%
Intersection #2				
Average speed	22.0	19.0	20.4	18.5
Percentage traffic stopped or slowed to 10 m.p.h.	37%	76%	30%	93%

E. F. (Bert) LAY

E. F. (Bert) Lay, Associate Member, ITE, died suddenly Friday, August 23, at Austin, Texas. He was 47 years old.

At the time of his death he was assistant city traffic engineer in Austin, having been a part of the Traffic and Transportation Department since its organization in 1950. Prior to that he had been engaged in traffic work as a staff officer of the Austin Police Department.

Lay attended Austin schools and the University of Texas. He was a tireless worker for traffic facilitation and safety. With his enforcement background he provided the close tie between traffic engineering and the police without which new or remedial measures are often rendered ineffectual or end in failure. Active in Institute affairs, he had been for some years a member of the Committee on Paint and Bead Specifications.

Surviving are his wife, two daughters, his parents, a brother, a sister and two grandchildren.

Reference Notes

STATEWIDE CAMPAIGN FOR REALISTIC SPEED LIMITS

by Bryan Wilson
(Mem., ITE)

Traffic Engineer
Wisconsin Division, AAA

A STATE-WIDE campaign urging every city and town in the state of Wisconsin to re-evaluate speed limits on major through streets and to make them more realistic has been launched by the American Automobile Association's Wisconsin Division. It proposes that present speeds now being driven on these streets be determined, and that the speed at or below which 85 per cent of the motorists are now driving be accepted as the *realistic speed limit*, and so posted.

The AAA Motor Club began its fight for realistic speeds early in the year by preparing a "Speed Package" containing data to support its conviction that present speed limits in cities were obsolete and resulted only in making violators out of many safe drivers and good citizens, without helping to decrease accidents. A copy of this "Speed Package" was mailed to the Mayor or Village President, Chief of Police, and Secretary of the Chamber of Commerce of every city or town with a population of 1,000 or over in the state.

The contention of the Motor Club is that the great majority of motorists drive at reasonable and proper speeds according to conditions and that they are capable of recognizing and accepting conditions that warrant lower speeds.

Wisconsin state statutes have set minimum speeds of 25 m.p.h. in both business and residential sections of cities and towns. However, the common practice is to post this minimum speed limit on practically all streets, including main arterials in outlying sections. In fact, some of the 25 m.p.h. limits extend so far into the country that the only adjacent development consists of cornfields and perhaps some sad-eyed cows forlornly observing the passing cars from across the barbed wire fence that confines the right-of-way.

The Club further contends that the subjection of motorists to a traffic control which is unwarranted breeds disrespect for other traffic regulations, especially in view of the fast-growing and wide-spread use of radar in a program of rigid enforcement by local authorities.

The Club points out that rigid enforcement of obsolete speed limits does not reduce accidents, because speed is frequently not the culprit; that many violations other than "Speed — Too Fast For Conditions" have resulted in far more accidents, these other violations being: "Followed Too Closely," "Turning From Wrong Lane," "Failure to Yield Right-Of-Way," "Failure to Stay in Correct Lane," "Disregarded Stop Sign or Signal," etc.

Yet, despite the fact that Wisconsin Accident Facts for 1955, published by the state Motor Vehicle Department, shows that the violation "Speed—Too Fast for Conditions" was allegedly responsible for only 10.7 per cent of all Wisconsin motor accidents, this one violation seems to have been singled out for special emphasis presumably because of the ease by which it can be determined. One has only to pass a radar at a speed exceeding the posted limit and he is automatically guilty of the violation "Speed — Too Fast for Conditions." Since these limits are not prima facie, any argument presented to show that he was not driving too fast for conditions is simply wasted effort.

The AAA Motor Club does not accept this as being in the best interest of motorists. It does not feel that the violation of an obsolete and ridiculous speed limit is proof of a speed too fast for conditions. It appreciates the fact that driving conditions are constantly changing — and are not static as is the sign. It points out that under certain conditions such as fog, sleet, snow, congested traffic, etc., driving even at or below the posted speed would be too fast for conditions.

On the other hand, there are many main through streets where conditions usually make it possible to drive safely at speeds of 30, 35, and 40 miles per hour. The AAA Wisconsin Division is engaged in a continuing campaign pointing out the benefits of conducting scientific speed studies and then establishing new limits in accordance with these findings. Unless we think more in terms of "go" than "slow," we will never be able to handle our steadily increasing traffic volumes.

Last year, Wisconsin adopted the Point System, under which large num-

This picture, complete with unrealistic speed sign and threat of radar, was taken just north of a small Wisconsin town.

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FLEX-O-LITE INTRODUCES NEW FREE FLOWING REFLECTIVE GLASS BEADS

Flex-O-Lite Manufacturing Corporation, St. Louis, producer of reflective glass beads for highway markers and signs, has been granted a patent incorporating seven claims for the manufacture of its new free flowing glass beads, it was announced today by

New highs in humidity resistance, workability, ease of application, brilliance and reflectivity are available in new Free Flowing Glass Beads by Flex-O-Lite... finest achievement of the reflective glass bead manufacturer's art.

The result of five years of research and development, they were fully tested for 24 months with the cooperation of highway and traffic engineers. Already they are in use in several states and in many cities throughout the country. A trial order will convince you. Write us today for details and free Specifications Booklet.

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1. Marked resistance to high humidity
2. Flow freely through dispensing equipment
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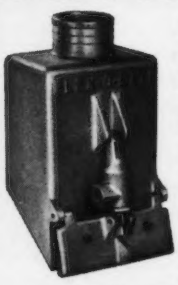
4. Contain no injurious waxes, oils, resins or silicones
5. Offer perfect adhesion to any suitable traffic bead binder



New Flex-O-Lite Positive Free Flowing Bead Dispenser

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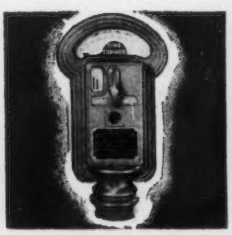
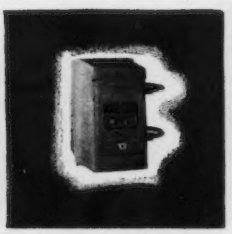


Duncan-Miller Model "50" ®



Duncan Fine-O-Meter ®

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bers of careful driving motorists are accumulating points and, in some cases, have actually lost their driving licenses not because of unsafe driving practices, but because of unrealistic speed limits.

In short, the Wisconsin Division, AAA, while it definitely believes that there should be speed limits in order to control the small per cent of reckless or drunken drivers, nevertheless feels that these limits should be high enough to be reasonable and realistic, and should be the speed at which 85 per cent of the people are presently driving. Regardless of the present speed limit signs. After all, what is so sacred about the numeral 25?

The "Speed Package" also contained excerpts from Wisconsin Statutes relating to speeds in cities, and instructions and work sheets by which local authorities were shown how legally to raise speed limits after engineering studies.

Response to this recently launched fight to obtain realistic speeds in Wisconsin cities and towns has been encouraging. A number of cities have shown interest, many hundreds of citizens have poured letters into this headquarters praising the idea, and one county has asked the help of the Club's traffic engineer to re-evaluate speed limits on all its county roads.

The Motor Club realizes that an attempt to change speed limits which have changed little or none since the invention of the motor car is a large order, but it accepts the challenge to better motoring conditions, and will carry on the fight!

In the face of constantly improved traffic conditions over the country, better and more roads, with gigantic programs for the future, such an issue as this one of hampering traffic and wasting valuable roads seems bound to have arisen sooner or later, and the Wisconsin Division, AAA, is proud to have launched what is probably the greatest organized effort in the history of motoring to better traffic conditions by helping towns and cities replace antiquated and obsolete speed limit signs with more realistic ones.

Reference Notes

FIRST METER-EQUIPPED LOT IN WICHITA

by George J. Fisher
(Mem., ITE)
Director of Service, Wichita, Kansas

THE FIRST METER-OPERATED, city-owned parking lot in the City of Wichita, started full operation on March 28, 1957.

The north end of the parking lot is located two blocks from the center of the downtown retail district. Since the location and type of lot suggested a "split personality" (the north end area being nearer the shopping area), the lot was divided into two sections providing different time limits and rates. In the north section there are 95 four-hour limit meters at 50 cents for four hours. The south section provides 86 nine-hour limit meters with the first two hours for 25 cents and the last 7 hours for 25 cents.

The Wichita parking lot viewed from atop the Forum building. At the right is City Traffic Engineer James E. Angell who designed the lot.

All meters in the lot are adjusted to give accumulative time. For example, if the first parker buys two-hour parking in one of the nine-hour meters and leaves with one hour remaining, the second parker inserts a quarter with the result that the first 12.5 cents buys an hour and the next 12.5 cents buys time at 3.57 cents per hour or a total of 3.22 hours. Furthermore, all meters accept nickels and dimes, as well as quarters, through the single coin slot. This permits the user to purchase fractional time at hour-rates ranging from 12.5 cents per hour down to 3.57 cents.

The lot has one 24-foot entrance and one 24-foot exit on the south; one 20-foot exit on the west and one 30-foot combination exit and entrance on the north. There are four parking aisles, each approximately 24-feet wide by 640-feet long. Total area is 51,400 square feet or an average of 284 square feet per car with 181 car spaces. A walkway down the center of the lot and overhead lights provide 24-hour parking, seven days a week. There is a 50-cent coin changer located at the north end of the lot which is being used with increasing frequency.

Meters are mounted on two-head adapters which required one pipe setting for each two cars spaces. Model H Magee-Hale Park-O-Meters were selected for use in the lot using a total of 181 meters. Using the adapter type installation saves one-half the pipe in-

stallation, provides coin control over each individual meter, and at the same time permits transfer of either, or both, mechanisms to street operation if desired. Parking angle is approximately 80 degrees and has proved most satisfactory.

The parking lot is located directly across the street from the city-owned Forum Building which is used for public events. The recent installation has answered the parking problem for such affairs in addition to relieving a considerable part of the on-street parking problem in this down-town area.

The split-rate feature, permitting long time parking at redu ed rates is meeting enthusiastic acceptance particularly with suburban visitors and downtown workers who enjoy all day parking conveniently located and reasonably priced. No attendant is employed. Meter violations are checked by cycle police during routine on-street schedules.

STRICTLY BUSINESS

(Continued from page 33)

one strand of wire is used to carry an impulse in both directions simultaneously. This permits execution and confirmation in less than two seconds. Not only does a CAT operator have an entire traffi-control network at his fingertips, but he has instantaneous confirmation of every command.

When the operator presses a button to initiate a signal sequence, a coded message is wire transmitted to a receiving device at the traffic light itself. The traffic light responds immediately to the operator's instructions.

Traffic may be shunted from two lanes of a three lane road into one lane to meet increased traffic flow in the opposite direction. A lane or an intersection may be cleared of traffic to permit passage of an emergency vehicle. Traffic may be detoured out of a blocked lane or guided to an alternate route.

Tassco Producing Improved Sign Letter

Following the equivalent of three years of "on-the-road" testing under all weather and climatic conditions, a new highly efficient reflectorized, demountable cut-out sign letter is offered by Traffic & Street Sign Company, 84 Fountry Street, Newark, New Jersey. The sign features what is said to be greatly improved characteristics for all road conditions, and is designed to equal the latest criteria for daytime legibility combined with a nighttime reflectorized stroke width equal to Bureau of Public Roads Series "C." Road testing shows the Tassco letter delivers excellent visibility by day and night even when displayed under poor conditions. Structurally, the sign is of high strength, aircraft-type aluminum, alodized and finished in triple-coat baked enamel, with reflectorization super-imposed. The letter is mounted flat on either wood or metal backing material. The design is also available in numerals, symbols and borders.

MOTOR VEHICLE DEATHS AND DEATH RATES

1955, 1956, and 1957

Month	1955	1956	1957	1955-57 Change	1956-57 Change
January	2,810	2,990	2,900	+ 3%	—3%
February	2,319	2,720	2,530	+ 9%	—7%
March	2,602	2,920	2,860	+10%	—2%
April	2,753	2,930	2,930	+ 6%	0%
May	3,101	3,170	3,110	0%	—2%
June	2,982	3,290	3,290	+10%	0%
July	3,350	3,570	3,320	+ 1%	—7%
Seven Months	19,917	21,590	20,940	+ 5%	—3%
August	3,586	3,610			
September	3,446	3,710			
October	3,918	3,460			
November	3,559	3,690			
December	4,000	3,940			
Total	38,426	40,000			

All 1955 figures are from the National Office of Vital Statistics.
All others are National Safety Council estimates.

Coming Events

October 13-17 — AMERICAN INSTITUTE OF PLANNERS —
Annual Meeting, Congress Hotel, Chicago, Illinois. Contact: AIP, 34 Brattle St., Cambridge 38, Mass.

October 14-18—AMERICAN SOCIETY OF CIVIL ENGINEERS—
National Convention, Statler Hotel, New York City. Contact: ASCE, 29 W. 39 St., N. Y. C.

October 17-19 — NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS —
Fall Meeting, Grand Pacific Hotel, Bismarck, N.D. Contact: NSPE, 2029 K St. N.W., Washington 6, D.C.

October 21-25—NATIONAL SAFETY COUNCIL—
Annual Safety Congress & Exposition Congress, Conrad Hilton and other Hotels, Chicago, Ill. Contact: NSC, 425 N. Michigan Ave., Chicago 11, Illinois.

November 18-22 — AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS—
Annual Meeting, Conrad Hilton Hotel, Chicago, Ill. Contact: AASHO, National Press Bldg., Washington 4, D.C.

1958

January 6-10—HIGHWAY RESEARCH BOARD—
Annual Meeting, Sheraton Park Hotel, Washington, D.C. Contact: HRB, 2101 Constitution Ave., Washington 25, D.C.

March 17-19 — WESTERN SAFETY CONGRESS & EXHIBITS —
5th Annual Meeting, Ambassador Hotel, Los Angeles, Calif. Contact: Joseph M. Kaplan, 3388 W. 8th Street, Los Angeles 5, Calif.

May 18-22—AMERICAN SOCIETY OF PLANNING OFFICIALS—
Annual Conference, Hotel Statler, Washington, D.C. Contact: Dennis O'Harrow, ASPO, 1313 E. 60th St., Chicago 37, Ill.

September 16-20 — FOURTH INTERNATIONAL STUDY WEEK IN TRAFFIC ENGINEERING—
Copenhagen, Denmark. Contact: World Touring and Automobile Organisation, 32 Chesham Place, London, SW1, England.

September 22-25 — INSTITUTE OF TRAFFIC ENGINEERS—
Annual Meeting, Columbus and McAllister Hotels, Miami, Fla. Contact: ITE, 2029 K St. NW, Washington 6, D.C.

A FULL REPORT
ON THE
DETROIT MEETING
WILL APPEAR IN THE
NOVEMBER ISSUE

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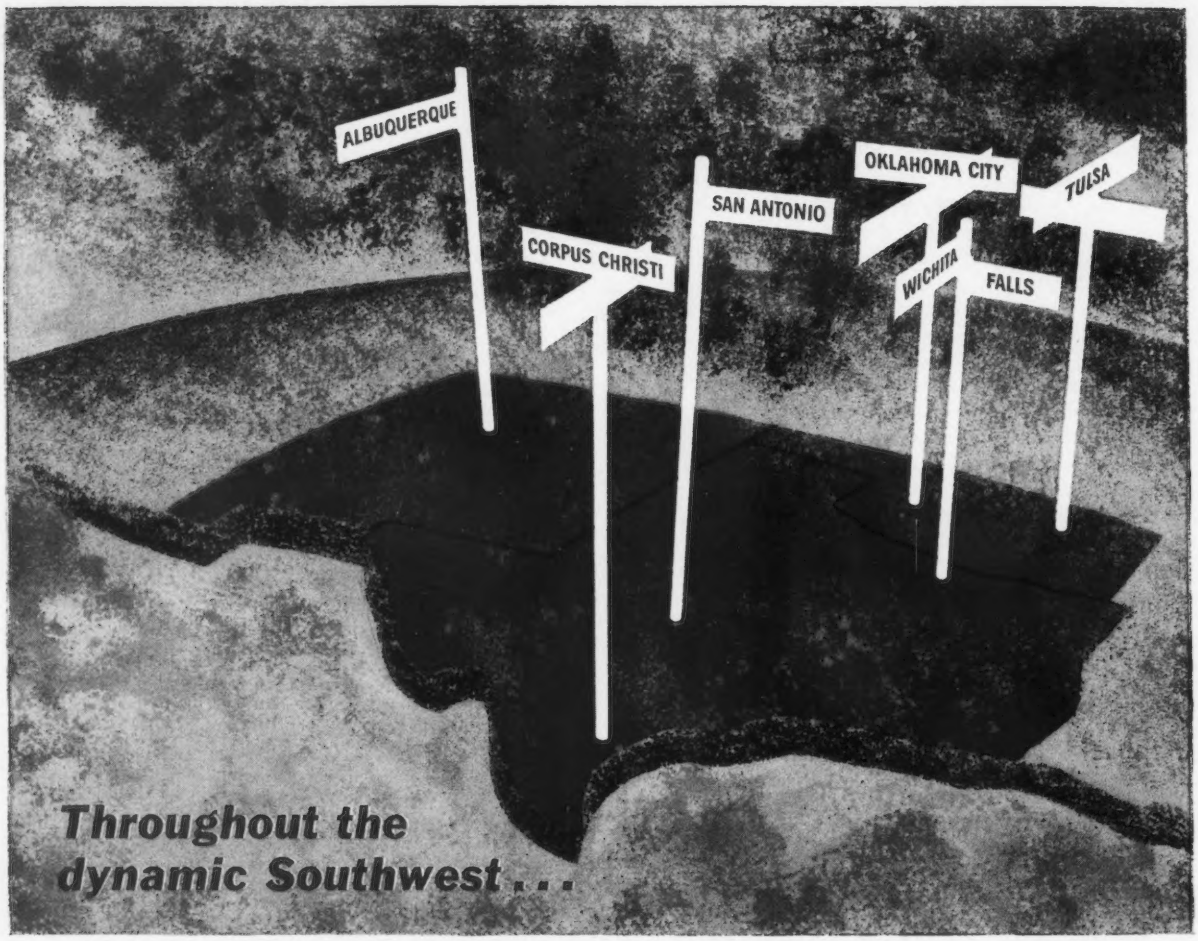
This October issue was on the press during the Detroit meeting, but November will provide full coverage.



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470 Main Street
Clinton, Massachusetts

Traffic & Street Sign Co.
80 Foundry Street
Newark, New Jersey

Zumar Industries
1608 Essex Street
Los Angeles 28, California

INSTITUTE AFFAIRS

(Continued from page 34)

Planning Survey, Columbus, Ohio; Walter A. Barry, Jr., DeLeuw, Cather and Company, Chicago; Matthew J. Huber, Bureau of Highway Traffic, Yale University; J. M. Keneipp, George Barton & Associates, Evanston; Edward A. Mueller, Traffic and Planning Department, Florida State Road Department, Tallahassee, Florida; Michael A. Powills, George Barton & Associates, Evanston; Henry D. Quinby, Parsons, Brinckerhoff, Hall and MacDonald, Engineers, New York City; and Alan M. Voorhees, Automotive Safety Foundation, Washington, D.C.

Douglas Earl McFarlane, Ontario Department of Highways, Toronto, Ontario was an applicant for Institute membership at the time of the course.

Portable Traffic Signals

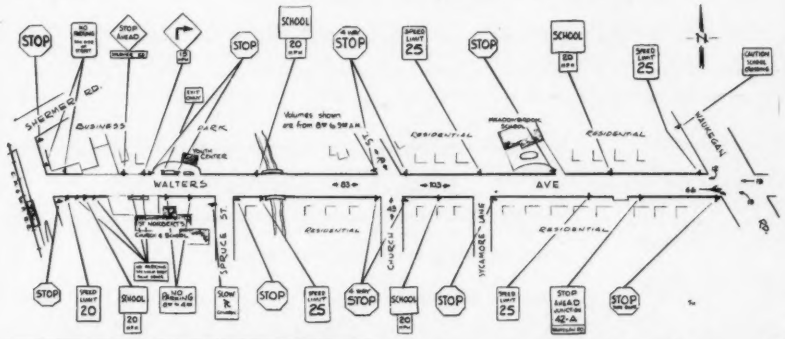
The name of Portable Traffic Signals, Inc., 1615 South Broadway, Los Angeles 15, California was omitted on the list of Sustaining Organizations published in the September issue of the magazine. The name of this firm should have been included in the list, with the representative shown as Mr. H. D. Stockley.

How Many Signs are Enough?

Most members of the Institute find it hard to resist serving on local traffic committees or giving other assistance to their home communities. Typical is the situation of Leo G. Wilkie, traffic engineer of the Cook County Highway Department and a member of the Northbrook (Illinois) Safety Commission. Northbrook is a typical small suburban community in the Chicago metropolitan area.

In connection with work of the Safety Commission, a study was made of a four block stretch of a Northbrook street carrying a maximum of about 100 vehicles during the morning hour from 8-9 a.m. To illustrate his point that the area was over-signed, Wilkie prepared a sketch, reproduced below, showing the multiplicity of signs on this short length of street.

We suspect this situation is repeated in many areas. Have you a similar example from your town?



LETTER TO THE EDITOR

Sir:

The use of oversize (12 inch) traffic signal indications has become increasingly popular in recent years. In most cases, the oversize red lens is used in combination with conventional 8 inch red and amber indications; occasionally (as along Storrow Drive in Boston), a complete oversize signal installation has been effected.

It is generally recognized that the oversize signal indication has a definite place in the field of traffic control. Yet, to date, there has been little standardization of usage; warrants and policies have not been developed; more definitive studies and research are in order.

One use for oversized signals becomes apparent. It is recommended that oversize 12 inch lens be accepted as the standard for flashing amber and red warning beacons. The larger signal indication will improve the visibility and target value, and hence effectiveness of the flashing units.

HERBERT S. LEVINSON
Associate Traffic Engineer
Wilbur Smith and Associates

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Statement Required by the Act of August 24, 1912, as Amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the Ownership, Management, and Circulation of Traffic Engineering, published monthly at Plainfield, New Jersey.

1. The names and addresses of the publisher, editor, managing editor and business managers are:

Publisher—Institute of Traffic Engineers, Inc., 2029 K Street NW, Washington 6, D.C.

Editor—David M. Baldwin, 2029 K Street NW, Washington 6, D.C.
Managing editor—None.
Business manager—None.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given: If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (if there are none, so state.) None.

Institute of Traffic Engineers, Inc.

OSMUN FORT,
Agent of the Publisher

Sworn to and subscribed before me this 12th day of September, 1957.

[Seal]

WILLIAM L. CHRISTIAN,
Notary Public of N. J.
(My commission expires April 1st, 1958)

INDEX TO ADVERTISERS

A'G'A Division of Elastic Stop Nut Corporation 4
Aluminum Company of America ..... 48 & 49
Automatic Signal Division of Eastern Industries, Inc. 41
Cataphote Corporation 37
The Eagle Signal Corporation 2
Flex-O-Lite Manufacturing Corporation 44
General Electronics Corporation 33
Minnesota Mining and Manufacturing Company ..... 26 & 27
Pfaff and Kendall 31
Prismo Safety Corporation ..... Back Cover
Radiator Specialty Company 38
Rockwell Dual Manufacturing 8
Streeter-Amet Company 30
Union Metal Manufacturing Company 3
United States Government Bonds 6

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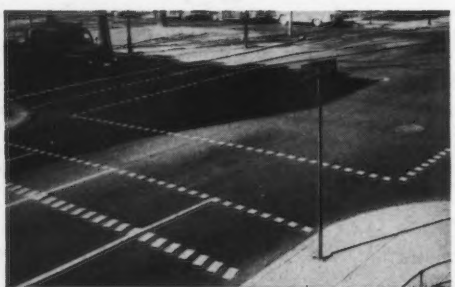

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